Mississippi Department Of Information Technology Services

Systems and Procedures Manual

MS Department of Information Technology Services
3771 Eastwood Drive
Jackson, MS 39211
Phone: (601) 432-8091
Fax: (601) 713-6380
http://www.ms.gov

CICS FORMS /CICS PROGRAM
CICS FORMS /CICS Tdqueue
CICS FORMS /CICS TRANSACTION
CICS FORMS /CICS (all CICS forms on one)
PERMANENT DATA SETS - INITIAL SET-UP
TCP/IP PRINT

PREFACE

ITS Data Services provides support, maintenance, and management of a number of shared state infrastructure facilities including: (1) IBM Z/OS mainframe environment; (2) State wide area network; (3) State Internet access; (4) Capitol Complex campus area network; (5) State portal environment; (6) E-mail servers; (7) Various other UNIX or Windows based servers as appropriate.

The purpose of this manual is to provide both general information to ITS customers and outline policies and procedures for using the state shared infrastructure. This is a "living" document updated periodically to add new sections and to revise previously published information.

Modified: 07/14/2011

NEW AGENCY REQUESTING TO DO BUSINESS WITH ITS

Please send a request on agency letterhead requesting that your agency be able to connect and do business with ITS. This request should include the billing address, list of the names of people needing a user-id defined, what applications these users need, and the name of a contact person.

NEW USERS IDS TO ACCESS ITS DATA CENTER

If you need to request new user-ids please fax (601 359-1394) or mail a letter with the following information: agency name, agency code, contact person and phone number, and a list of the names of the people needing a user-id defined. If this is for TPX access, please list the applications needed, or give an existing user-id to model the id after. The written requests should be sent to:

ITS Mainframe Security Administrator
MS Department of Information Technology Services
3771 Eastwood Drive
Jackson, MS 39211

SERVICE CENTER

ITS SERVICE CENTER

The ITS Service Center assists customers and clients of ITS Data Services and Telecom Services. This is ITS's single point of contact to request assistance for Data Services and Telecom Services. To help speed up and track resolutions in a timely manner, we ask you to contact the Service Center for all issues instead of calling individual technical analysts directly.

This Service Center is designed to function based on the ITIL (Information Technology Infrastructure Library) best practices model. It is staffed with trained personnel that are customer service oriented, knowledgeable about the resources ITS offers, and helpful in seeing that IT and Telecom issues are resolved.

Currently we are implementing the Incident and Problem management functions of ITIL. The Change management function is in development with the Open Systems team and will be the next ITIL phase rolled out. This will be followed by other ITIL management functions over the next year as we move to the new Data Center.

The telephone number to reach the new ITS Service Center is: 601-359-5959. If you are outside the Greater Jackson Metro Area you may call us toll free at 1-888-850-5173. The old Data Services and Telecom Service Help Desk numbers will roll to this new number and team. You may also reach the team via email at: service.center@its.ms.gov.

Please note that telecom requests such as phone adds, moves, and changes should still go through Telecom Customer Service at 601-359-6333 or e-mail: telecomrequest@its.ms.gov.

State employees can submit new issues directly to the ITS Service Center, as well as check on the status of existing tickets, via the Computer Associates Unicenter Service Desk (CA-USD) tool available at https://support.its.ms.gov. State employees will log in using their ACE ID and password. Customers and clients that do not have an ACE ID can contact the ITS Service Center to have a Service Desk account created for them.

Any problems encountered with the Service Center personnel should be brought to the attention of the Service Center Manager at 601-359-2580.

EMAIL SERVICES

EMAIL SERVICES

Data Services provides email services for any state agency not wanting to invest in the hardware, software, and personnel needed to maintain their own internal email services. We are running Scalix Messaging server on Linux. Email accounts can be provided to agencies as requested at a nominal fee of $4.00 per account per month plus $1.00 per GB of storage used across all accounts. Premium accounts are available at $6.00 per account per month plus $1.00 per GB of storage used across all accounts.

All requests for email services (account setup, account deletion, password changes, etc.) should be sent to service.center@its.ms.gov. or 601 359-5959 or 866 850-5173. If the agency does not yet have an email account, send a written request to:

Steve Patterson
Data Services Division, ITS
301 N. Lamar Street, Suite 508
Jackson, MS 39201

GIS HARDWARE PLATFORMS

GIS HARDWARE PLATFORMS

3 - IBM HS 21 Blade Server
3 X 16GB ram
6TB of FELX 380 SAN storage

5 TB Flex 210
3 TB NAS

VM
- 243 - msgisasdev
- 244 - msgismstest
- 238 - msgisms1 16 GB 4-CPU

PORTAL HARDWARE OVERVIEW

PORTAL HARDWARE OVERVIEW

2 - 7014-T00 Enterprise Rack

2 - IBM 9110-51A 510q servers
2 processors
16 GB RAM

3 - IBM 9133-55A 550q servers
4 processors
16 GB RAM

2 - 9511 Flat monitor machine type 9511-AG4

2 - 7316 Trays machine type 7316-TF1

2 - Apex Outlook KVM 8 port switch Model 289ES

1 - IBM 9111-520 520 server
2 processors
16 GB RAM

1 - IBM 9111-520 520 server
2 processors
8 GB RAM

1 - IBM 9111-520 520 server
1 processor
8 GB RAM

1 - IBM DS4400 (FastT700) SAN
20 TB Fiber Channel Storage

1 - IBM HS 21 Blade
16 GB RAM
72 GB Hard Drives x 2

AIX

***A**dvanced **I**nteractive e**X**ecutive,* our UNIX operating system on our 9 - IBM pSeries boxes.

APACHE HTTP

Short for ***H**yper**T**ext **T**ransfer **P**rotocol* , the underlying protocol used by the World Wide Web. HTTP defines how messages are formatted and transmitted, and what actions Web Servers and browsers should take in response to various commands. We use the public domain web server **Apache**.

GIS SOFTWARE

ESRI 9.2 Advanced Enterprise ArcGIS Server Java Edition
ESRI 9.2 ArcIMS Application Server Java Edition
ESRI 9.2 ArcSDE Server for DB2
2007 Spatial Direct FME Server
ESRI GIS Portal Toolkit 3.1

ArcGIS server for the Java Platform 9.2 SP4
ArcGIS ArcIMS 9.2 SP4
ArcIMS web ADF for the Java Platform 9.2 SP2

ArcGIS Server for the Java Platform 9.2 SP4
ArcGis ArcIMS 9.2 SP4
ArcIMS WebADF for the Java Platform
SpatialDirect 3.2.5 Beta

IBM DB2

Relational Database used by the Portal applications and IBM Websphere Application Software

IBM MQSERIES

MQSeries messaging products enable application integration by helping business applications to exchange information across different platforms by sending and receiving data as messages

IBM WEBSPHERE

IBM WebSphere is a collection of software products that work on IBM and non-IBM platforms to help us develop and manage Web sites. The WebSphere Application Servers help provide the infrastructure for deploying our Web applications.

TIVOLI ACCESS MANAGER

This software provides the control solution for e-business applications. It provides a security model which allows for authentication, access control, Single Sign On and Audit across the e-business and legacy applications. Other pieces of this software include WebSeal which is a proxy server and LDAP, which is a DB2 database used for storage of users and group credentials.

GIS POLICIES

No current information for this topic.

WEB SERVICES

Data Services also maintains a Web server for hosting agency Web sites. Currently, agencies are charged only for the space that they utilize on the Web server -$5.00 for 10 Meg. with a minimum $5 charge. To request Web services, send your request to request@its.state.ms.us or send the request in writing to the address given above.

The ISS Division of ITS provides actual Web development services. Agencies wishing to inquire about these services should contact Shirley Poirrier at 359-2696 or John McManus at 359-5124.

DIAL-SERVER

We no longer user dial-up servers.

MAINFRAME HARDWARE OVERVIEW

Hardware Configuration for ITS-IBM 2096-S07

Three engine processor at approximately 614 MIPS/Total.

26 ESCON, 16 FICON and 8 OSA Connections
24 GB main storage
1 Escon Directors
2 IFL engines
1 CF (Coupling Facility) engine

Peripherals-

1 IBM ESS800 SHARK (shared) DASD Subsystem
*****Storage devices are configured as shared
*****Total DASD capacity is about 6.6 TB
2 IBM DS8300 DASD Subsystem Storage devices are configured as shared
14 Timberline drives
10 9840 tape drives
8 3490 tape drives

1 IBM TS7740 Virtulization Automated Tape System (128 virtual drives,

8 actual (3590s)

*****All tape and network devices are shared with MDHS IBM 2086-250

1 Xerox Nuvera 120 Printer/Copier/Scanner
2 3174 Local Controllers
1 Channel-Channel connect to MDHS 2086-250 using Escon channels

Hardware Configuration for MDHS IBM 2096-S02

Two engine processors at approximately 415 MIPS/Total.

24 ESCONN, 12 FICON and 8 OSA Connections

24 GB main storage

No Escon directors

2 Zaap engine

1 Ziip engiine

Peripherals-

1 IBM ESS800 SHARK (Shared) DASD Storage Subsystem.

1 EMC Symmetrix DASD Subsystem (Shared)
*****Storage devices are configured as shared

2 Storage IBM Tek Powderhorn Library Storage Modules 12 Timberline 9490 Tape Units

10 9840 tape drives

1 VTS with 3494 Automated Tape System (32 virtual drives, 5 actual IBM 3590s)

1 Cisco 7505s with CIP cards connected to CAN fiber network and to ATM/FR wide area network via Fractional OC3 and Cisco 8540 switch

1 Open Systems adapter module (100 mbps)

****All tape & network devices are shared w/ITS – IBM 2096-S07****

1 IBM 3174 - 11L
The three printers & 3174 are attached remotely w/fiber & IBM 3074

2 3174 Local Controllers

1 Channel-Channel connection to IBM 2096-S02 using Escon channels

ADABAS

ADABAS, Software AG's semi-relational database, has been adopted by the State Data Center as the supported Database Management System for the state. The ADABAS environment supports multiple files and users within one database with concurrent on-line and batch access against the database. There are several features which make ADABAS a superior product. These include the compression of data stored in the database thereby requiring less storage than normal, the management of file space by ADABAS which significantly reduces administrative work for the database, and the numerous utilities available for various functions against the database.

Programs written to access information in a database will normally be written in NATURAL or COBOL using SQL. Natural is a fourth (4th) generation language written by Software AG to further simplify the access of ADABAS database files. Natural can also be used to access non-ADABAS files. It is relatively easy to learn and use and classes are offered at ITS for those who are interested. SQL (Structured Query Language) can be used with COBOL, PL/I and other languages to access the database. This is another Software AG product and those who wish to utilize the product should order the user's manual from Software AG.

ADABAS APPLICATION DEVELOPMENT

ADABAS should be strongly considered for new on-line application development or when re-writing existing applications. ADABAS and NATURAL 2 are ideal for developing applications requiring the use of multiple keys.

The Data Center currently maintains a shared ADABAS database for development and a shared ADABAS database for production. All database maintenance in this shared environment is handled by the Data Center Staff, including database backups (which includes the agencies ADABAS files), reordering files and the database as needed, etc. Agencies will be responsible for loading their own files in the development database. This must be set up for a particular user through RACF, though. If an agency can show that the size and activity for their ADABAS applications demands a private database region, this request may be granted, but the responsibility of maintenance shifts to the owning agency.

ADABAS RELATED PRODUCTS

In addition to Natural and SQL, there are a number of Software AG products that have been purchased by the State Data Center to aid in the development and implementation of ADABAS applications. Below is a list and brief description of these products.

PREDICT - The data dictionary that is used in conjunction with ADABAS. All ADABAS files must be defined in PREDICT before they can be created. PREDICT is also used to generate Data Definition Modules (DDMs) which are views of the fields you want to access in a Natural program. It can also be used to document an ADABAS application.

NATURAL CONNECTION - This is a PC-based product that allows the user to establish a connection between his PC and the host (providing the PC has the proper board). It can also be used as a stand-alone product on the PC to allow multiple sessions and to manage them via a menu. (DHS only)

NATURAL OPTIMIZER - This product allows Natural programs to be further optimized, that in turn increases program efficiency and response time. Using the Optimizer Compiler is only beneficial for programs that do a good deal of computations, MOVEs, IFs, DECIDEs, ASSIGNs, and statements of this type. It is of little or no benefit to use the Optimizer Compiler for programs which contain mostly I/Os (i.e. WRITE, DISPLAY, etc.). It is beneficial for maps only if they contain a number of processing rules.

The NATURAL OPTIMIZER increases the size of your Natural object module, so, there may be a problem with optimizing programs that are already quite large. Ideally, if a program appears to be a good candidate for the Optimizer Compiler, it should be developed without the Optimizer and optimized when stored in production. Contact Eddie Harrison (2611) or Bruce Lightsey (2644) to obtain more information on using NATURAL OPTIMIZER.

NATURAL ADVANCED FACILITIES - This product allows on-line printing to a CICS printer from a Natural program.

NATURAL CONSTRUCT - This product generates Natural code allowing application development to be done quickly.

NATURAL - This is the 4th generation language recommended for the development of ADABAS applications.

SQL - Allows access to ADABAS files from a COBOL program.

ADDITIONAL ADABAS INFORMATION

Classes on ADABAS and NATURAL are offered every semester at ITS. Check with Karen Newman at 601 359-2629 for additional information.

If you have questions or problems regarding ADABAS and NATURAL, contact Eddie Harrison at 601 359-2611 or Bruce Lightsey 601 359-2644 .

CA EASYTRIEVE

An information retrieval and data management system. It provides the client with the tools needed to produce comprehensive reports with ease, while its enhanced facilities provide the experienced data processor with the capabilities to perform complex programming tasks.

CA OPTIMIZER

We are currently running CA-Optimizer Version 6 Release 1. This product is an MVS COBOL optimization package with components for object code optimization, simplified program debugging plus other quality assurance and performance aspects.

A few highlights:

- Automatically optimizes and reduces the size of COBOL object code.
- Speeds up COBOL program execution time.
- Identifies unexecutable program code.
- Reduces the size of the compiler output listing.
- There are many others.

Optimizer is not an optional compile parameter, but is included automatically when you compile your COBOL program.

CA11

CA-11 is an Automated Rerun and Tracking System. It can be used as an effective management tool in a production environment and as an invaluable tool in a test environment. The objective of CA-11 is to improve resource use and productivity of the Data Center. CA-11 is designed to perform as a Run Handler, and as a Job Tracking System or a combination of both.

There are two types of job execution:

1. Production Run – which is the initial execution of a job.

2. Rerun – which is considered to be an extension or continuation of a production run.

The Run Handler provides the means for automatically handling all MVS catalog maintenance, dataset maintenance, and GDG bias adjustments for job reruns and restarts. It handles step restarts as easily as complete job reruns. The use of step restarts by CA-11, as opposed to complete reruns, and the reduction of reruns greatly improves the productivity of the data center.

The Tracking System captures job execution data permitting you to analyze the impact of reruns on personnel and resources. The Tracking System provides for retention of history data in the Job Execution History File.

These are two methods that can be used to implement CA-11 into your production jobs.

1. When production jobs are submitted by CA-7 a job scheduling system you have the option to have the CA-11 step inserted into the jobs's jcl.

2. The other method is to manually insert the CA-11 step as the first step in the jcl.
Example:
```
//STEP1 EXEC PROC=CL720RMS,PARM=P
```

CA7

CA-7 is an automated production control system. It is an online system that automatically controls, schedules, and initiates work according to time-driven and even-driven activities. CA7 can schedule all activities associated with the production workload based on an event or a time. These time-driven and event-driven facilities are used to schedule CPU production jobs. By using the CA7 job triggering feature a series of production jobs can be submitted based on the successful completion of one single job. CA7 supports both internal and external security.

CA7 capabilities include but are not limited to the following:

1. Help Facility – is a online function available at any CA7 terminal.

2. Security – a security matrix is provided with CA7 to allow or restrict access to jobs in the database.

3. Work Load Scheduling – CA7 can schedule all activities associated with the production work load.

4. Job Restart – by using the CA11 option, jobs that fail can be restarted from a certain step or rerun as a production job through CA7.
5. Email - CA7 can generate and send email messages. The content of the email can be generic or contain information about a specific job in the CA7 queues.
6. Cross-Platform Scheduling - A CA7 scheduling solution can request work to be run on its behalf by another CA scheduling solution on a different platform.

Example: Job trigger

JobA
JobB
JobC JobD

When JobA runs successfully, it triggers JobB, when JobB runs successfully, it triggers JobC and JobD.

CADELIVER

CA-DELIVER is a report distribution system that automates your daily report distribution functions. Deliver can do the following:

1. Separate sysout(system output) into individual reports.
2. Generate Banner pages that list individuals who are to receive reports.
3. Bundle reports according to individuals and groups of individuals.
4. Maintain historical data on bundles and reports.

These are several types of reports that can be defined with Deliver:

1. Basic Report – report contains an entire sysout
2. Stacked Report – contains exclusive segments of a single sysout
3. Stacked Overlapping – pages of data that may be duplicated in other reports

The Deliver database maintains six types of data:

1. Job Description Data
2. Report Description Data
3. Distribution Data
4. Bundle Description Data
5. Active report Status Data
6. Active Bundle Status Data

Deliver has to have the following defined to the database in order to process a sysout:

1. Jobname – job producing the sysout

2. Stepname – name of step output is coming from
3. Procstep – name of proc output is coming from
4. Ddname – ddname from the step that produces the output
5. Report Name – a unique name (1-12) characters

There is a special sysout class that Deliver uses to capture output to be processed, that sysout class will be coded on the DD statement that produces the output.

Example: PRINTER1 DD SYSOUT=R

One of the best features of CA-DELIVER is that all reports that are processed have the option of being archived to CA-VIEW a data repository that can be used for reprints.

CAVIEW

CA-VIEW is a facility that archives and retrieves computer output. Any SYSOUT can be specified for archiving. CA-VIEW is especially well-suited to management of the following classes of data:

1. Production JCL listing and messages
2. Production reports
3. Syslog data

Production reports can be automatically archived and printed. Should a report get lost or need to be reprinted, the retrieval system reprints it from archival, eliminating the need for reruns. Large reports can be archived directly to tape to minimize disk requirements. When a job, or time-sharing session has output queued for processing any output meeting the archival criteria is written to the current disk generation(or tape, if specified).

Using CA-VIEW, production JCL listings and messages can be automatically archived and kept for a specific amount of time. You can retrieve SYSOUT easily from an online terminal using the online retrieval facility. CA-VIEW allows the client to select a SYSOUT group for browsing or printing then scroll through the SYSOUTS using the CA-VIEW Browse facility. SYSOUT indexing and logical view features, allow the client to automatically display only a portion of a SYSOUT that you need.

CA-VIEW uses a special capture class to bring SYSOUTS in for archival. Ex. PRINTER1 DD SYSOUT=V (will send the output from this DD to the CA-VIEW database for archival).

CICS & CICS TEST

The Customer Information Control System is a transaction oriented communications interface between MVS and the user application program. The capabilities provided by CICS include inquiry, data entry, message switching, broadcasting and data collection.

CICS is designed to handle system requests generated by user-written routines. It uses the supervisor and data-management services of MVS. The Data Center is currently running CICS TS 3.1.

SOME OF THE FEATURES OF CICS INCLUDE THE FOLLOWING:

1. Terminal polling in conjunction with a telecommunication access method (VTAM or BTAM) or access via TCP/IP.

2. Multitasking facilities required for concurrent processing of multiple transactions. Priority scheduling and transaction synchronization are also provided.

3. Storage control of available main storage is handled dynamically in the allocation, disposition and use of this resource to answer requests from the several terminals.

4. File management functions support direct access, indexed sequential, VSAM data sets, and DBMS.

Updates, additions and inquiries are commonly used functions for most applications.

CICS TEST

All users now use the same region for testing. The applid is TEST.

Users should add their own PPT and PCT entries to TEST via the CICS CEDA transaction .File entries (FCT) are added by the ITS CICS support staff. After file entries have been added to the FCT, it is not necessary for the files to be in the start-up JCL for the files to be used.

COBOL

ITS Data Center currently supports ENTERPRISE COBOL FOR Z/OS 4.1.0.

The Data Center will phase out COBOL II and OS/VS COBOL as soon as practical. ENTERPRISE COBOL for Z/OS is one of IBM's Language Environment Enabled products. Language Environment products are capable of calling any other Language Environment product in a standardized, consistent manner.

C++

The C language is a general purpose, versatile, function-oriented programming language that allows a programmer to create applications quickly and easily. C provides high-level control statements and data types as do other structured programming languages, and it also provides many of the benefits of a low-level language.

The C++ language introduces object-oriented concepts into the C language, on which it is based. IBM's Z/OS C/C++ includes:

- a C compiler
- a C++ compiler
- a set of C++ class libraries
- Application Support class and collection class library source
- a set of C/C ++ application development utilities

DB2

The Data Center has DB2 from IBM available for those agencies in our user community that require an industry standard relational database for enterprise-scale applications.

DB2 is IBM's relational database management system and, as the industry leader on the mainframe, offers standard SQL syntax for storing, manipulating, and querying data. This means that the entire gamut of tools and interfaces available in the PC, midrange, and mainframe markets is compatible with DB2 and may be used as the agency sees fit.

DFSORT and ICETOOLS

IBM's DFSORT utility has been greatly enhanced with the addition of ICETOOL. ICETOOL will let you make multiple copies of a data set in a single pass of the input data set. It will allow you to split a data set in to multiple files based on selection criteria.

ICETOOL and DFSORT can be used to write formatted reports with sums and totals. You can find the complete DFSORT manual at the IBM DFSORT homepage on the web.

The following is an example of using ICETOOL to read one data set and create two copies at once.

```
//CCICE JOB (CC30,2611),HARRISON,MSGCLASS=X,CLASS=A,NOTIFY=CCTSD03
/*ROUTE PRINT N1R28
//* ------------------------------------------------------------- *
//* ICETOOL COPY EXAMPLE                                          *
//* ONE PASS OF INPUT TO TWO OUTPUTS                              *
//* ------------------------------------------------------------- *
//STEP1 EXEC PGM=ICETOOL
//TOOLMSG DD SYSOUT=*
//DFSMSG  DD SYSOUT=*
//TOOLIN  DD *
 COPY FROM(INDD1) TO(OUTDD1,OUTDD2)
/*
//INDD1 DD DSN=CCTSD03.SOURCE.PDS(CCCAD602),DISP=SHR
//OUTDD1 DD DSN=CCITS.SCRATCH.OUTDD1,UNIT=DISK,DISP=(,CATLG,DELETE),
//       SPACE=(CYL,(5,1),RLSE),DCB=(RECFM=FB,LRECL=80,BLKSIZE=3120)
//OUTDD2 DD DSN=CCITS.SCRATCH.OUTDD2,UNIT=DISK,DISP=(,CATLG,DELETE),
//       SPACE=(CYL,(5,1),RLSE),DCB=(RECFM=FB,LRECL=80,BLKSIZE=3120)
```

The following is an example of using ICETOOL to split a file into two files based on the contents of a particular column in the data set, in this case, a COBOL program. All the comments (an * in column 7) will be in one file and the rest of the program in the other file.

```
//CCICE JOB (CC30,2611),HARRISON,MSGCLASS=X,CLASS=A,NOTIFY=CCTSD03
/*ROUTE PRINT N1R28
//* ------------------------------------------------------------- *
//* ICE TOOLS EXAMPLE USING SELECTION CRITERIA                    *
//* ONE PASS OF INPUT TO TWO OUTPUTS                              *
//* INDD1 CONTAINS COBOL SOURCE                                   *
//* OUTDD1 WILL CONTAIN ALL COMMENTS - I.E. AN '*' IN COL.7       *
//* OUTDD2 WILL CONTAIN ALL OTHER COBOL SOURCE STATEMENTS         *
//* ------------------------------------------------------------- *
//STEP1 EXEC PGM=ICETOOL
//TOOLMSG DD SYSOUT=*
//DFSMSG  DD SYSOUT=*
```

```
//TOOLIN  DD *
 COPY FROM(INDD1) USING(ALL2)
/*
//ALL2CNTL DD *
 OUTFIL FNAMES=OUTDD1,INCLUDE=(7,1,CH,EQ,C'*')
 OUTFIL FNAMES=OUTDD2,INCLUDE=(7,1,CH,NE,C'*')
/*
//INDD1 DD DSN=CCTSD03.SOURCE.PDS(CCCAD602),DISP=SHR
//OUTDD1 DD DSN=CCITS.SCRATCH.OUTDD1,UNIT=DISK,DISP=(,CATLG,DELETE),
//       SPACE=(CYL,(5,1),RLSE),DCB=(RECFM=FB,LRECL=80,BLKSIZE=3120)
//OUTDD2 DD DSN=CCITS.SCRATCH.OUTDD2,UNIT=DISK,DISP=(,CATLG,DELETE),
//       SPACE=(CYL,(5,1),RLSE),DCB=(RECFM=FB,LRECL=80,BLKSIZE=3120)
```

FATS/FATAR TAPE UTILITIES

FATS - Fast Analysis of Tape Surfaces.
FATAR - Fast Analysis of Tape and Recovery (Replacement for TAPESCAN).

The Center has acquired a tape management facility package consisting of FATS and FATAR from Innovation, Inc. This package combines the tape scan function with many other useful tape utilities into an easy to use, well documented offering. FATS will be beneficial mostly to the Center's tape librarian. But, FATAR could prove very useful for any programmer that processes tape at the Data Center. The functions of FATAR tape media are:

(1) Investigating an "unknown" tape to discover the label type, file count, DCB characteristics, etc.

(2) Mapping a tape to provide a summary of characteristics of all files on the tape.

(3) Examining the data on the tape.

(4) Detecting and correcting invalid variable spanned records.

(5) Verifying that certain fields contain certain data.

(6) Scanning a tape for a certain type of data.

(7) Scanning a tape for temporary and permanent read data checks to verify the readability of tapes for critical jobs.

(8) Correcting invalid data or data checks by creating a copy of the input tape with the bad data deleted or corrected.

(9) Creating a good copy of a tape dataset that was not closed properly. This would be useful after a system failure.

(10) Recovering data from a tape partially written over by a shorter dataset.

(11) Creating a backup copy of any tape (or multi-volume set of tapes, even if multiple files exist on the tape).

(12) Creating copies of tapes at a higher density or on a different type of tape drive.

(13) Copying tapes with blocksizes greater than 32k such as FDR tapes.

The following JCL may be used to analyze, a tape:

```
//xxjobnme JOB (xx,00),name,MSGCLASS=x,CLASS=N
/*ROUTE PRINT Rx
// EXEC PGM=FATAR
//SYSPRINT DD SYSOUT=*
//TAPESUMM DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//TAPEIN DD DSN=FIRSTDS,UNIT=TAPE,
//* unit=tape36 (if tape is used in the SILO)
// LABEL=(,BLP),DISP=OLD,VOL=SER=xxxxxx
//SYSIN DD *
     ANALYZE
```

FDR/DSF

FDR (Fast Dump Restore) performs full-volume backups and restores, as well as full-volume disk to disk copies. FDRDSF (Data Set Function) performs backups and restores of selected data sets and VSAM clusters. If can also do data set restores from full-volume backups produced by FDR.

Modified: 07/13/2010

FILE-AID

File-Aid is an extremely powerful interactive software product that increases productivity by simplifying daily file and record maintenance. File-Aid browses, edits, allocates, compared, copies, deletes, and prints files of any standard MVS access method including CA-Panvalet and IAM. File-Aid allows you to browse, edit, and copy PDS fields as individual members or as an entire data set. Record processing and information retrieval are extremely fast. Most functions are available in batch as well as TSO.

File-Aid's powerful editor expands your editing capabilities to include the following features:

- A character mode for browsing and editing DASD datasets with any record format and record length up to 32kb.
- A formatted mode that allows you to browse or edit one record at a time, field-by-field, using your COBOL or PL/1 record layout field names to describe each field.
- A vertical formatted mode that allows you to browse or edit records on field-by-field basis using record layout as column headers.
- A compare function that compares two datasets field by field using the specified record layouts and reports the differences between the files.
- A reformat function for selectively reformatting records using old and new record layouts to guide the process.

File-Aid is accessed from TSO either using the Compuware Products menu which is either option 35 or option 37 from the ITS utilities menu depending on your logon PROC (=U.35 or =U.37) or by keying FAMENU from the TSO command screen (=6).

File-Aid is backed by an extensive online tutorial that is accessible by pressing the PF1 key from any screen.

HIGH LEVEL ASSEMBLER

The High Level Assembler is an IBM programming language used to develop programs and sub-routines not typically provided by other languages such as COBOL. Although normally used by systems programmers for low-level systems code, the High Assembler is available for general use as needed. The current version is High Level Assembler for Z/OS Release 1.11.

IAM

IAM (Innovation Access Method) from Innovation Data Processing is a high performance disk file manager that is used in place of VSAM KSDS or VSAM ESDS data sets for batch, TSO, and online processing. It is able to handle a large amount of data within a single user data set and reduce batch processing time and online processing time while accessing the data.

ISPF

ISPF works in junction with TSO. ISPF helps programmers develop interactive applications called dialogs.

Dialogs are interactive applications because ISPF uses them to communicate with terminal users through a series of panels while the users do application development tasks.

ISPF panels:

- Provide access to ISPF functions (menus)
- Request information (data entry panels)
- Provide information (scrollable data displays)

JAVA

Java is a hardware independent programming language that allows application to be delivered to an end user from a Java application server, from the World Wide Web through a web browser or directly from the user's PC. Java requires a Java virtual machine to execute. The Java virtual machine translate and executes the Java program. The Java virtual machine provides what is essentially a hardware abstraction layer for the Java program. The Java virtual machine interfaces with the hardware ensuring that the application performs the same on all Java supported platforms.

Modified: 07/13/2010

JCLCHECK: A JCL VALIDATION UTILITY

JCLCHECK performs complete syntax checking on JCL statements, JES2 control statements, and certain IDCAMS and IEHPROGM control cards. It also validates and interprets JCL related IDCAMS and IEHPROGM control cards. JCLCHECK simulates allocation/termination conditions to identify common errors such as misspelled dsnames, incorrect disposition, and incorrect volume serial numbers. The system checks execution time errors that are caused by invalid JCL by checking for missing or invalid programs, missing datasets, and incorrect DCB information. JCLCHECK will even check the correct order of cataloged procedure overrides (a problem that has plagued many programmers at one time or another).

There are several ways to invoke JCLCHECK. To check JCL that has been edited under ISPF, simply enter !JCK from the command line in the edit session. !JCK is an ISPF edit macro that detects errors so that they can be corrected immediately. The highlighted lines are informational messages that can deleted with the RESET command. If you have several job streams that need to be passed through JCLCHECK, ISPF panels on the U menu are available. Input is allowed from PANVALET datasets or PDSs. The panels will invoke JCLCHECK in the foreground or background. Several reports are produced to give the programmer information about the jobs.

There are other features of JCLCHECK, such as the JCLNEAT function that reformats and standardizes JCL, which may interest some programmers. The manual is available from Computer Associates.

JES-MASTER

JES-MASTER is a JES2 SYSOUT dataset processor. It allows the user to examine the status of jobs that are present on the JES2 spool within the confines of the Data Center security. Jobs may be held, requeued, released, canceled or deleted. The same functions can be invoked for individual datasets of the job. In addition, SYSOUT dataset attributes may be modified, datasets edited, browsed, printed or copied.

In the JES-MASTER foreground environment, the user can see the status of jobs at a glance. Job list summaries include information on job return codes, size of SYSOUT datasets and print queue characteristics for each dataset. These features make JES-MASTER an excellent monitoring tool for production jobs. The user can quickly spot failures within an application job stream, and initiate corrective action.

JES-MASTER, in the foreground environment, allows great flexibility in managing job and SYSOUT dataset characteristics. Jobs and datasets may be requeued under a different class or to alternate destinations. Number of copies, special forms, character sets, and other specifications, may be altered.

A user may selectively browse SYSOUT datasets in the JES-MASTER foreground environment. JES-MASTER does not restrict the user to a single dataset browse. The browse request may specify more than one SYSOUT dataset from the job. The selected datasets are combined for presentation to the user.

JES-MASTER in the background environment is a better choice for large volume dataset activity that would tie up resources and where hardcopy is required. In addition, JES-MASTER aids in the recovery of jobs and datasets from a damaged JES2 spool dataset. The JES-MASTER product allows for selective copying of datasets or partial datasets. Spin datasets are completely supported.

JM/SPF

The JM/SPF environment runs under IBM's TSO/ISPF. JES-MASTER is invoked from the ISPF/PDS primary option menu. Under ISPF, you would type in U.J on the command line. Panels have been created to provide an interactive interface to the powerful features of JESMASTER. The user views jobs, modifies and controls SYSOUT datasets under ISPF functional control.

JM/UTIL

The JM/UTIL interface is for standard TSO and batch environments. This

interface is characterized by a command level dialogue under TSO. All functions of the JM/SPF interface, except dataset browse, are implemented in JM/UTIL.

A JM/SPF user may invoke the JM/UTIL interface. This allows the use of the background processing for large SYSOUT datasets.

JES2

JES2 is the primary sub-system that controls all jobs in an MVS (Z/OS) environment. All jobs submitted, all printouts, printers, RJEs and NJE nodes are under JES2 control. MVS performs no useful work without JES2 active.

PANVALET

PANVALET is a program management and security system, designed to support the central storage, fast retrieval and maintenance of source programs, object programs, job control language and card image files.

PDSMAN

PDSMAN (partitioned dataset management system) is a software package that provides security at the member level for partitioned datasets. Control statements can be defined to allow UPDATE (read/write) access to a member, or to allow READ access only. These control statements are defined based on the partitioned dataset name, member name, and who needs access.

Users are notified if an access attempt to a member of a PDS is made in which they are not authorized. All violations are recorded in SMF. Two of the most common error messages are as follows:

PDSM018-2 – ACCESS BY userid NOT AUTHORIZED FOR MEMBER membername OF dataset name

PDSM021-2 – update type BY userid NOT AUTHORIZED FOR MEMBER membername OF dataset name

PDSMAN will optionally maintain control information in the PDS directory entry of each specified library member.

PDSMAN also provides a variety of PDS utility functions, which include listing member contents, listing member control information, scanning a PDS for the occurrence of a particular string, etc. There is a TSO/ISPF panel (U.10) that allows a user to access the PDSMAN utility functions.

If a PDS or member of a PDS needs to be protected by PDSMAN, or if additional permission is needed to be allowed, a written request should be sent to the ITS Mainframe Security Administrator listing the PDS name, member(s), userids that need access, and what kind of access (UPDATE or READ). The address is:

ITS Mainframe Security Administrator
MS Dept. of Information Technology Services
301 N. Lamar St., Suite 508
Jackson, MS 39201

Questions regarding this product may be directed to the ITS Data Service Desk at 601-359-5959.

RACF

RACF (Resource Access Control Facility) or Security Server ,as it is called now, is a security system that allows the definition of users and groups, the definition of resource profiles, the control or resource access, and the auditing of violations. RACF is covered more in detail on pages 127-129.

REXX

The REstructured eXtended eXecutor (REXX) language is general purpose programming language. REXX has the usual structured programming instructions such as IF, SELECT, DO WHILE, LEAVE and so on. It also has numerous built-in functions. The REXX language imposes no restrictions on program format. REXX is an interpreted language. REXX is composed of two parts. The two parts are the Z/OS TSO/E REXX interpreter and the restructured extended executor.

SAS

SAS systems consist of several different software packages. Following is a brief description of the software available for your use through the Data Center.

Base SAS software is an all purpose data management, analysis and reporting tool. The library contains easy to use procedures and utilities that eliminate a lot of programmer coding. Data can be read in any format from any file. Base SAS can be executed with a batch job by executing proc CCSAS or interactively using the CLIST CCSAS.

FSP software is an interactive menu driven facility that allows data entry, editing and retrieval of SAS files, letter writing and spreadsheet analysis. It can handle large amounts of information efficiently. Multiple users may browse the same dataset simultaneously.

GRAPH software is a graphics system that allows you to display data vividly with just a few SAS/GRAPH statements. Procedures are available for creating contour, two and three dimensional plots; bar, pie, star, and block charts; choropleth, surface, prism and block maps.

ETS software are SAS procedures that are useful in doing financial analysis, time series extractions, data management and plotting, forecasting and time series analysis, modeling and econometrics.

The Data Center is currently running SAS Version 8. If there are any questions on the use of this software package, contact the Service Desk at 601 359-2666 or Carolyn White at 601 359-2640.

Modified: 07/13/2010

SMS - STORAGE MANAGEMENT SUBSYSTEM AND NEW NAMING STANDARDS

SMS is a solution to problems of data and storage management. It will simplify and automate storage management which will reduce the time agency personnel spend on routine management of data.

Benefits of SMS:

1. Simplified JCL. Device-dependent allocation parameters, such as UNIT, VOL=SER, and space allocation in TRACKS and CYLINDERS, are not needed for SMS data.

2. Managing Space on DASD. DFHSM uses the management classes in SMS to automatically manage and expire unused datasets. DFHSM can also reclaim space that was allocated for datasets, but not being used and is not needed. With automatic space management there are fewer space-related problems and more efficient use of DASD space.

3. Managing Dataset Availability. Migrating, backing up and retention of data can be done on the dataset level instead of on the volume level. We have established dataset naming standards which need to be followed for successful SMS. These naming standards will include temporary, permanent, restart and test datasets.

Listed below are the naming standards that are enforced at the Data Center.

1. Temporary Datasets. These are datasets created to be used for the day; then deleted next day. The first level qualifier should be your agency code or TSO logon ID, the second level qualifier must be SCRATCH. (EX: CC.SCRATCH.PHONE.DATA or CCTSA02.SCRATCH.JOB.LIST)

2. Test Datasets. These are datasets created to be used as test data but are not to be automatically deleted. The dataset would have a first level qualifier as your agency code or TSO logon ID and the second level qualifier must be TEST. (EX: CC.TEST.WORK.DATA) This type of dataset will expire after 120 days.

3. Restart Datasets. These datasets are neither temporary or permanent. The dataset will be kept for seven days before being deleted. Use this type dataset when job abends force restarts and interim datasets must be available. To create

this type of dataset, set the first level qualifier as your agency code and the second level qualifier as RESTART (EX: CC.RESTART.PAY.MASTER). Restart datasets should be deleted by production job stream steps when jobs have completed normally.

4. Permanent Datasets. These datasets created will be permanent (never deleted). The first level qualifier must be your agency code and the second level qualifier PROD. (EX: CC.PROD.ENTRY.DATA)

Those datasets that do not follow the naming standards are deleted after one day.

The next page has details of how each class of datasets will be managed by HSM. This will include how often it is backed up, when it will be migrated to a ML1 DASD (storage DASD), when it will be migrated to ML2 (tape), and if and when it will be deleted.

TCP/IP

Access to applications on the Z/OS system can be facilitated through TCP/IP. TCP/IP is used so that the Z/OS system interfaces more seamlessly with other platforms. TCP/IP access to 3270 applications requires a TN3270E client. HTTP and FTP are enabled.

TLMS TAPE MANAGEMENT

The tape management file(TLMS) is updated automatically when a tape is created. Listed below are a few highlights of the tape library management system:

1. TLMS will eliminate the problem of having tapes written over. If the tape is not a valid scratch, TLMS will dismount the tape.

2. Offsite tapes will not be handled by TLMS. It will be up to the user as to whether or not an offsite tape is to be written on.

3. When a tape is scratched by TLMS, the dataset is automatically uncataloged, and the tape becomes an immediate scratch.

4. TLMS will not let you MOD to a tape unless DISP=(MOD,...) is coded.

5. Do not code EXPDT or RETPD in your JCL.

TPX - TERMINAL PRODUCTIVITY EXECUTIVE

TPX is a multiple session manager that manages several sessions concurrently, allowing a person to switch back and forth among different sessions on their physical terminal or connection. TPX uses a virtual terminal for each session.

ACCESSING TPX

To use TPX, you enter "TPX" from the ACF/VTAM (ITS) screen on a terminal set up to use TPX, or by connecting to mvs1.its.state.ms.us via a TN3270 IP session. You will then be prompted to enter a userid and password. You will then be given a menu of applications authorized for your use. This menu is based on userid **NOT** terminal id. At this point you may start sessions with TSO, CICS, CICSTEST, etc. by entering an 'S' in front of the session name. You may return to the menu by pressing the PF4 key (DEFAULT) or go to another session by entering '/SESSION-ID (PF12)' in the input area of your screen.

Requesting TPX

To request TPX userids, please send a letter to:

ITS Security Administrator
Ms. Dept of Information Technology Services
301 N. Lamar St. Suite 508
Jackson, MS 39201

You will need to include the following in your letter:

- Terminal ID(s) to access TPX (if TPX is not on the VTAM menu)
  NOTE: TN3270 sessions connected to mvs1.its.state.ms.us (port 23) automatically get a TPX logon screen
- Name of person needing a new TPX userid
- Applications to be displayed on the TPX menu

All users within an agency may use the same TPX menu. We also need to know how many concurrent users you expect in any applications so we can determine how many virtual terminals to define in VTAM. All virtual terminals will start with your agency code.

Miscellaneous Information for TPX

TPX Menu Status Indicators:

N/A Application not available
O/P Application output is pending
PASS Application is in PASS mode
ACT Application session is active
ACL An ACL/E program is running in the session
Q/S Application is quiesced

Inactivating Sessions and logging off TPX

Note: Before logging off TPX, it is best to logoff each application, or from the TPX menu, you can place an 'I' beside each active session to inactive them. Then, to get out of TPX, you can enter /F or /K from the command line on the TPX menu to logoff TPX and then close your TN3270 session.

Common Messages Displayed in TPX:

APPLICATION NOT AVAILABLE – Explanation : TPX issues this message if an attempt to
activate an application session fails because the application is unavailable.

Action : Wait a few minutes and then try again. If this message continues, call the ITS Help Desk to
make sure the application is active.

NO VIRTUAL TERMINAL AVAILABLE – Explanation : TPX doesn't have a virtual terminal available for your use. TPX may not be able to activate a session if it cannot find an available virtual terminal that satisfies the model or naming requirements, or if all available virtual terminals for the application are already in use.

Action: Wait a few minutes and then try again. If the problem persists, call the ITS Service Desk.

TSO

TSO (Time Sharing Option) runs as a started task to allow users a way to logon to the mainframe. ISPF is a clist that can be run within TSO to allow access to data sets residing on the mainframe, whether to edit, browse or delete data sets.

Xpediter/TSO

Xpediter/TSO is a debugging and testing tool for batch COBOL programs. Xpediter/TSO allows a programmer to interactively step statement by statement through a COBOL program watching the execution of each statement. At any time, the programmer can:

- Intercept program Abends.
- Start or stop execution at any point.
- Display and modify variable, register, and storage contents
- Trace logic flow
- Logically review program execution in the reverse direction
- Alter Logic
- Bypass unwanted code
- Temporarily insert Xpediter/TSO debugging statements
- Display file status and DCB information.

Xpediter/TSO is accessed from the Compuware Products menu which is either option 35 or option 37 from the ITS utilities menu(=U.35 or =U.37). Programs must be compiled using either of the compile options on the Compuware Products menu in order to be used by Xpediter/TSO. Xpediter/TSO is backed by an extensive online tutorial available at the press of the PF1 key.

The Compuware Corporation web address is WWW.COMPUWARE.COM

ZIP4

The Data Center has available mailing software for their USERS with large mailing projects. This software which is provided by LPC Software provides the neccessary steps for obtaining mailing discounts through the United States Postal Services(USPS). There are three products associated with this software package, which we are calling ZIP + 4. They are listed below:

The BARCODE EXPRESS product provides everything you need to develop applications for printing Postnet barcode on your outgoing mail. By printing barcodes on your letters you can take advantage of the USPS postal discounts for pre-barcoded mail.

FINALIST is a CASS-certified software product that helps you manage address information. The following steps briefly describe the processing FINALIST performs on your files:

1. Corrects misspellings in street and city names.

2. Standarizes address elements such as directionals(NE, North) and suffixes(Ave., St., etc) to USPS specifications.

3. Compares each address to the Finalist Data File and verifies the address to be unique and correct. The data files are updated quarterly.

4. Corrects ZIP code, Zip+4 code, or carrier route code errors. These are the key to USPS deliverability and help determine if your mailing qualifies for postage discounts.

5. DPV - (Delivery Point Validation) Takes the addresses that finalist matches with the USPS ZIP+4 database and conpares them with another USPS datafile confirming that the address is a valid delivery point.

6. LACS Link - Uses finalist to access the USPS LACSLink database to determine if and address converion is required. Finalist will return any converted address in a standardized, cleansed format.

You may access the FINALIST database online in the TEST CICS region by entering one of the following transactions: LPCT or LPCF.

MAILSTREAM PLUS is an IBM mainframe-based product that helps mailers take the quesswork out of the presort regulations as stipulated by the USPS in the Domestic Mail Manual (DMM). Mailstream Plus provides many options to enable large mailers to take advantage of the work share programs offered by the USPS to obtain large discounts.

Additional information and/or manuals may be obtained by contacting Carolyn Moore at 601 359-2640.

ADABAS CATALOGED PROCEDURES

CCNATURL - This proc can be used to execute a batch Natural program. This proc can be printed off to obtain a description of how to use it.

CCADABAS - This proc supplies the basic JCL needed to execute an ADABAS utility. Most utilities will have additional DD statements to be added as shown in the ADABAS Version 7 Utilities Manual.

SQLCL - Compile and link a batch ADABAS SQL COBOL program.

SQLCICS - Compile and link a CICS ADABAS SQL COBOL program.

SQLEXEC - Execute an ADABAS SQL COBOL program .

ADABAS FILE CREATION

Once an agency is ready to create an ADABAS file, the following steps must be taken:

1. Userids for development must be requested. You will need one administrative user for accessing PREDICT and a development userid for each programmer. A development library will also need to be set up. This is done by the Data Center Staff.

2. An ADABAS file request form must be completed by the user and submitted to the database area at the Computer Center. If approved, a file number will be assigned to the file and the user will be notified of the file number.

3. The ADABAS file must then be defined in the Data Dictionary using the MAINTENANCE function. Once the ADABAS file has been defined, use the GENERATION function to generate ADAWAN cards, the NATURAL DDM and COBOL copy code (if needed). The file name as defined in the dictionary should begin with the user's agency code. The name of the member that is generated for the ADAWAN cards should have the following format:

   XXFIL999

   Where XX is the agency code and 999 is the file number. This should be done by the user.

4. Next, a batch NATURAL program should be run to punch the ADAWAN cards from the dictionary to a PDS member where they can be used by the compression utility. Use the following jobstream to accomplish this:

```
//jobname JOB ----
// EXEC CCNATURL
//STEP1.CMWKF01 DD DSN=CC.ADABAS.DB88.JCL(XXFIL999),
// DISP=SHR
//SYSIN DD *
%*
SYSDIC,userid,password
MENU
PUNCH XXFIL999,WANLIB
FIN
/*
```

Where userid, password is your NATURAL userid and password. This step should also be done by the user.

5. At this point, the file should be printed by the user and submitted to the database area for review. The file must, however, be defined to Natural Security (done by CC), before it can be listed using batch Natural.

6. Once the file design is approved you are ready to load your file into the development database. Before you run your load (JCL example below), contact Eddie Harrison at 601 359-2611 or Bruce Lightsey at 601 359-2644 to make sure load parameters have been set up for your file.

```
//XXLOD999 JOB (XX,XX),XXXX,MSGCLASS=C,CLASS=A,NOTIFY=XXXXXXX
/*ROUTE PRINT R28
//*****************************************************************
//*
//* SO TAKES A SEQUENTIAL FLAT FILE AND COMPRESSES USING THE
//* ADABAS FILE DESCRIPTION. THE DD STATEMENT DDEBAND SHOULD
//* POINT TO YOUR FLAT FILE IF YOU ARE LOADING A NON-EMPTY FILE.
//* IF YOU ONLY WISH TO EMPTY LOAD THE FILE, DUMMY THIS.
//*
//*****************************************************************
//SO EXEC CCADABAS,DB=88,PROGRAM=RUNCMP
//DDEBAND DD DUMMY
//DDAUSBA DD DSN=&&TEMPH,UNIT=DISK,DISP=(,PASS),
// SPACE=(CYL,(15,3),RLSE)
//DDFEHL DD DSN=&&ERRORS,UNIT=DISK,DISP=(,PASS),
// SPACE=(TRK,(5,1),RLSE
//DDKARTE DD DSN=CC.ADABAS.DB88.JCL(XXFIL999),DISP=SHR
//*****************************************************************
//*
//* IF THE COMPRESS FINDS INVALID DATA COMING IN FROM THE FLAT
//* FILE THE FOLLOWING STEP CAN BE USED TO PRINT THE RECORDS OR
//* SOME OF THE RECORDS IN ERROR.
//*
//*****************************************************************
//*SOA EXEC PGM=IEBPTPCH
//*SYSPRINT DD SYSOUT=*
//*SYSUT1 DD DSN=&&ERRORS,DISP=OLD
//*SYSUT2 DD SYSOUT=*
//*SYSIN DD *
//* PRINT TYPORG=PS,STOPAFT=50
//*
//S1 EXEC CCADABAS,DB=88,PROGRAM=RUNLOD
//DDEBAND DD DSN=&&TEMPH,DISP=OLD
//DDKARTE DD DSN=CC.ADABAS.DB88.JCL(XXLD1999),DISP=SHR
//*
```

ADABAS FILE REQUEST FORM

ADABAS FILE REQUEST FORM

REQUESTING AGENCY: ___________________________ DATE: ___________

AGENCY CONTACT: ______________________ PHONE NUMBER: ___________

*FILE NAME: ______________________________(16 characters maximum)

**FILE NUMBER: _______ ***ESTIMATED NUMBER OF RECORDS: _________

RECORD LENGTH: ______________

WILL EXISTING RECORDS BE UPDATED ON A REGULAR BASIS IN SUCH A WAY
THAT IT WILL CAUSE THE RECORD TO BE EXPANDED? __________________
IF SO, BY WHAT PERCENTAGE? _________________

DESCRIPTOR INFORMATION

DESCRIPTOR NAME: _________________________ UNIQUE? Y/N: _______
AVERAGE LENGTH OF DESCRIPTOR VALUE AFTER COMPRESSION: ___________
AVERAGE NUMBER OF UNIQUE VALUES PRESENT IN EACH RECORD FOR THE
DESCRIPTOR (ALWAYS ONE EXCEPT FOR MU OR PE DESCRIPTORS): ________
NUMBER OF DIFFERENT VALUES FOR THE DESCRIPTOR IN THE
FILE (SAME AS # RECORDS IF UNIQUE): __________

DESCRIPTOR NAME: _________________________ UNIQUE? Y/N: _______
AVERAGE LENGTH OF DESCRIPTOR VALUE AFTER COMPRESSION: ___________
AVERAGE NUMBER OF UNIQUE VALUES PRESENT IN EACH RECORD FOR THE
DESCRIPTOR (ALWAYS ONE EXCEPT FOR MU OR PE DESCRIPTORS): ________
NUMBER OF DIFFERENT VALUES FOR THE DESCRIPTOR IN THE
FILE (SAME AS # RECORDS IF UNIQUE): __________

DESCRIPTOR NAME: _________________________ UNIQUE? Y/N: _______
AVERAGE LENGTH OF DESCRIPTOR VALUE AFTER COMPRESSION: ___________
AVERAGE NUMBER OF UNIQUE VALUES PRESENT IN EACH RECORD FOR THE
DESCRIPTOR (ALWAYS ONE EXCEPT FOR MU OR PE DESCRIPTORS): ________
NUMBER OF DIFFERENT VALUES FOR THE DESCRIPTOR IN THE
FILE (SAME AS # RECORDS IF UNIQUE): __________

* This is the long name for the file which can be more descriptive than the dictionary definition.
****** This will be assigned for you by the Computer Center DBA.
*** Allow for at least a year's growth.

NOTE: Test files will be held to 10 to 20 percent of production file sizes where large files are concerned.

MOVING ADABAS TO PRODUCTION

Once your application is ready to be moved to production database, contact Eddie Harrison at 601 359-2611 or Bruce Lightsey at 601 359-2644 to have production userids set up and to schedule your production move.

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BACKUP AND RECOVERY POLICY AND PROCEDURES FOR MAINFRAME

Purpose

To define responsibilities and delineate requirements for the State Data Center and the agencies as it pertains to data backup and recovery.

Policy

The State Data Center is responsible for the backup and, in case of disaster, the recovery of the following data:

1. All files necessary for all system products to function (ex. TSO, CICS, etc.)
2. Job libraries for all agencies (ex. XX.JOBLIB)
3. Source libraries for all agencies (ex. XX.SOURCE.LIBRARY)
4. CLIST libraries for all agencies (ex. XX.VSTSO.CLIST)
5. The procedures library - SYS1.PROCLIB
6. The partitioned dataset - CC.SORT.CARDS
7. The automatic job submission library - CC.AUTO.JOBS
8. All catalogs
9. The following libraries: CC.USERLIB, CC.UTILITY.LIBRARY, CC.COBLIB,SYS1.USER.MACLIB, CICSVS.TEST.MACLIB, CICSVS.JOBLIB
10. All Generation Data Group disk packs.
11. All databases.

All of the above will be backed up at least once a week and an offsite backup will be sent to an offsite storage center. The Data Center will not be responsible for agency libraries that are moved without notification to the Data Center.

Each agency is responsible for determining the need for and frequency of backups of

agency datasets. The agency is also responsible for restoring it's data in the event that the data is lost or becomes unusable. The Data Center staff will be available to give assistance as needed.

ITS BUSINESS RECOVERY POLICY AND STANDARDS

Summary
ITS has contracted with a company that provides business recovery services. This contract is renegotiated periodically. The BRS site has compatible equipment that will be used for recovery should a major disaster ever occur. The BRS vendor will provide WAN connectivity, DASD, tape drives, CPU and other equipment needed to resume processing. If you need further assistance or information about our disaster recovery policies or procedures, please contact Lawrence McCaleb, Contingency Planner at 601 359-9587.

1. **Weekly Offsite Backups**

ITS backs up DASD on Sundays. The tapes are picked up on Monday. We have four sets of tapes which are rotated on a weekly basis. Three sets are offsite at all times.

2. **Disaster Recovery Responsibilities of ITS**

ITS is responsible for restoring a working operating system and for restoring user data that has been backed up at the Data Center. Agencies should consider the age of the backed up data stored on ITS generated backup tapes. Depending on the time of a disaster situation, tapes used to restore data **could** be 7-10 days old.

3. **Disaster Recovery Responsibilities of Agencies**

Each agency should have a disaster recovery coordinator(s) and should inform ITS of the person(s) name, phone number and pager number. Each agency should keep the ITS Contingency Planner informed of any changes relevant to the agency's disaster coordinator. If the age of ITS's backup tapes (7-10 days old) is not acceptable for restoration of agency data, you will need to make your own offsite backups. Each agency must ensure that these tapes can be delivered to ITS at a moments notice should it be necessary to travel to the business recovery facility. ITS does not back up tape datasets offsite. Any critical agency information on tape should also be backed up offsite.

4. **Agencies Using Own Offsite Backups**

ITS must be informed in writing of the following information if your agency should choose to send your offsite backup tapes:

Volume serial names of the tapes
Disaster coordinator name, phone numbers and pager number(s)
The method used to backup disk files (recommended FDR)

It is the responsibility of each agency to have procedures in place to restore data once ITS has a system restored at the disaster site. Each agency should have an agency specific disaster recovery manual that will complement the procedures ITS has in place. Agencies should not solely depend on the disaster recovery plan of ITS. Each agency has unique situations that need to be considered in the case of a disaster. The procedures (manual or automated) to restore data to a current state should be included in this manual.

5. Testing Disaster Recovery Plan

A team at ITS will inform each agency of disaster situations and will update the progress of the disaster recovery team. The time to restore a system in any type of disaster is dependent on the actual damage to the computing facilities. If recovery time is estimated to be less than three days, restoration at the BRS facility will not be attempted. Otherwise, recovery at the BRS site will depend on available transportation for personnel and tapes, time for personnel to prepare for departure, and any other obstacles caused by the disaster situation. The target recovery time is 24 hours after the team has arrived at the BRS site. Depending on the extent of the disaster, agencies may be asked to relocate or may be asked to distribute work loads to allow all agencies to process. These decisions can not be made until a disaster has occurred and our assessment team has assessed the extent of the damage.

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SUGGESTIONS FOR USER BACKUP PROCEDURES

Daily Backups

For critical data that is updated rather heavily on a daily basis, it is recommended that an onsite daily backup of the data be created. It is also recommended that paper documents of the daily work be kept and bundled by day. If possible, the system should generate a report of the daily activity.

Weekly Backups

A weekly, onsite backup should be created for data that is updated periodically during the week. A weekly backup is sufficient as long as a great deal of time and effort would not be required to re-key a few days worth of data. As mentioned above, paper documents should be kept of the daily work and bundled by day.

Offsite Backups

For critical data, it is recommended that a weekly offsite backup be created and kept at the user's site or at Archives and History. For data that isn't updated heavily, it is recommended that a monthly offsite backup be created and kept at the user's site.

Note: OFFSITE BACKUPs are USELESS IF LEFT AT THE Data Center.

Reminder Concerning Tape Datasets

Non-GDG -If the dataset has not been used in thirty days and the creation date is more than sixty days prior to the current date, it will be deleted.

GDG -If the dataset has not been used in thirty days and the creation date is more than 180 days prior to the current date, it will be deleted.

TOOLS FOR BACKUP AND RECOVERY

Below is a list of the different types of files and the tools which can be used to backup and recover each type.
A. PS - Sequential Files
1. IEBGENER *
2. FDR
3. User Program

B. VSAM
1. IDCAMS *
2. FDR
3. User Program

C. IAM
1. IAMUTIL *
2. FDR
3. User Program

D. PO - Partitioned Dataset
1. IEBCOPY *
2. FDR

E. DA - Direct Access (Non-IAM Files)
1. IEBGENER *
2. FDR & FDRDSF
3. User Program
* Indicates the recommended tool to use. The following pages are examples of these recommended procedures.

IEBGENER

Example 1: The following JCL will backup the disk dataset named CC.TEST.FILE to a tape GDG named CC.TEST.BACKUP.FILE.

```
//CCBACKUP JOB (CC,00),CC,MSGCLASS=A,CLASS=N
/*ROUTE PRINT CC
//STEP1 EXEC PGM=IEBGENER
//SYSPRINT DD SYSOUT=A
//SYSUT1 DD DSN=CC.TEST.FILE,DISP=OLD
//SYSUT2 DD DSN=CC.TEST.BACKUP.FILE(+1),UNIT=TAPE,
```

```
//
DISP=(,CATLG,DELETE),DCB=(CC.GDG,RECFM=FB,LRECL=80,BLKSIZE
=6000)
//SYSIN DD DUMMY
```

Note: When creating a tape GDG, the DCB information for the dataset must be specified.

Example 2: The following JCL will restore the dataset named CC.TEST.FILE from the backup created in Example 1.

```
//CCRESTOR JOB (CC,00),CC,MSGCLASS=A,CLASS=N
/*ROUTE PRINT CC
//STEP1 EXEC PGM=IEBGENER
//SYSPRINT DD SYSOUT=A
//SYSUT1 DD DSN=CC.TEST.BACKUP.FILE(0),DISP=OLD
//SYSUT2 DD DSN=CC.TEST.FILE,UNIT=DISK,
// DISP=(,CATLG,DELETE),
// SPACE=(TRK,5),DCB=(RECFM=FB,LRECL=80,BLKSIZE=6000)
//SYSIN DD DUMMY
```

When restoring a disk file with IEBGENER, you must know the amount of space required for the file and code the SPACE parameter on the SYSUT2 dd statement If the file you are restoring is not a GDG, the DCB information need not be coded unless you want the blocksize to be different from that of the input file.

IDCAMS

Example 1: The following JCL will create a tape backup named CC.VSAM.BACKUP.FILE of the VSAM file named CC.VSAM.FILE. This example uses the EXPORT facility of IDCAMS.

```
//CCEXPORT JOB (CC,00),CC,MSGCLASS=A,CLASS=N
/*ROUTE PRINT CC
//STEP1 EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=A
//RECEIVE DD DSN=CC.VSAM.BACKUP.FILE,UNIT=TAPE,
// DISP=(,CATLG,DELETE),DCB=BLKSIZE=6000
//SYSIN DD *
EXPORT -
CC.VSAM.FILE -
OUTFILE(RECEIVE) -
TEMPORARY
/*
```

BLKSIZE is not required on the RECEIVE dd statement but should be coded if you wish to override the default of 2048.

Example 2: The following JCL restores the VSAM file named CC.VSAM.FILE from the tape backup named CC.VSAM.BACKUP.FILE using the IMPORT facility of IDCAMS.

```
//CCIMPORT JOB (CC,00),CC,MSGCLASS=A,CLASS=N
/*ROUTE PRINT CC
//STEP1 EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=A
//SOURCE DD DSN=CC.VSAM.BACKUP.FILE,DISP=OLD
//SYSIN DD *
IMPORT -
INFILE(SOURCE) -
OUTDATASET(CC.VSAM.FILE)
/*
```

If a VSAM file has an alternate index associated with it, you must IMPORT and EXPORT both the alternate index and the file.

Example 3: The following JCL creates a tape backup named CC.VSAM.BACKUP.ALTNDX of the alternate index named CC.VSAM.ALTNDX associated with the VSAMfile. Both backups will be contained on the same tape volume. The alternate index must be backed up first.

```
//CCEXPORT JOB (CC,00),CC,MSGCLASS=A,CLASS=N
/*ROUTE PRINT CC
//STEP1 EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=A
//RECEIVE DD DSN=CC.VSAM.BACKUP.ALTNDX,
// DISP=(,CATLG,DELETE),
// UNIT=TAPE,LABEL=(1,SL),VOL=(,RETAIN)
//SYSIN DD *
EXPORT CC.VSAM.ALTNDX -
OUTFILE(RECEIVE)
/*
//STEP2 EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=A
//RECEIVE DD DSN=CC.VSAM.BACKUP.FILE,
// DISP=(,CATLG,DELETE),
// UNIT=TAPE,LABEL=(2,SL),VOL=(,,REF=*.STEP1.RECEIVE)
//SYSIN DD *
EXPORT CC.VSAM.FILE -
OUTFILE(RECEIVE)
/*
```

Example 4: The following JCL restores the alternate index named CC.VSAM.ALTNDX from the tape backup named CC.VSAM.BACKUP.ALTNDX and the VSAM file named CC.VSAM.FILE from the tape backup named CC.VSAM.BACKUP.FILE. The file must be restored first and the alternate index last.

```
//CCIMPORT JOB (CC,00),CC,MSGCLASS=A,CLASS=N
/*ROUTE PRINT CC
//STEP1 EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=A
//SOURCE DD DSN=CC.VSAM.BACKUP.FILE,
// DISP=OLD,LABEL=(2,SL),
// VOL=(,RETAIN)
//SYSIN DD *
IMPORT -
INFILE(SOURCE) -
OUTDATASET(CC.VSAM.FILE)
/*
//STEP2 EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=A
//SOURCE DD DSN=CC.VSAM.BACKUP.ALTNDX,DISP=OLD,
// LABEL=(1,SL),VOL=REF=*.STEP1.SOURCE
//SYSIN DD *
IMPORT -
INFILE(SOURCE) -
OUTDATASET(CC.VSAM.ALTNDX)
/*
```

Another method for backing up and restoring a VSAM file is the REPRO facility of IDCAMS.
Example 5: The following JCL creates a tape backup named CC.VSAM.BACKUP.FILE of the VSAM file named CC.VSAM.FILE using the REPRO facility of IDCAMS.

```
//CCREPRO JOB (CC,00),CC,MSGCLASS=A,CLASS=N
/*ROUTE PRINT CC
//STEP1 EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=A
//DD1 DD DSN=CC.VSAM.BACKUP.FILE,UNIT=TAPE,
// DISP=(,CATLG,DELETE),DCB=(appropriate parameters)
//DD2 DD DSN=CC.VSAM.FILE,DISP=OLD
//SYSIN DD *
REPRO -
INFILE(DD2) -
OUTFILE(DD1)
```

```
/*
```

In order to restore a VSAM file from a backup created with the REPRO facility, the file must first be defined again using the DEFINE facility of IDCAMS. Therefore, you must know the attributes of the file in order to use the REPRO facility.

Example 6: After the VSAM file has been defined, the following JCL will restore the VSAM file named CC.VSAM.FILE from the tape backup named CC.VSAM.BACKUP.FILE using the REPRO facility.

```
//CCREPRO JOB (CC,00),CC,MSGCLASS=A,CLASS=N
/*ROUTE PRINT CC
//STEP1 EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=A
//DD1 DD DSN=CC.VSAM.BACKUP.FILE,DISP=OLD
//DD2 DD DSN=CC.VSAM.FILE,DISP=OLD
//SYSIN DD *
REPRO -
INFILE(DD1) -
OUTFILE(DD2)
/*
```

IAMUTIL

Example 1: DUMP operation. The following sample JCL dumps the IAM file named CC.TEST.IAM to a sequential tape backup GDG named CC.TEST.BACKUP.IAM.

```
//CCDUMP JOB (CC,00),CC,MSGCLASS=A,CLASS=N
/*ROUTE PRINT CC
//STEP1 EXEC PGM=IAMUTIL
//SYSPRINT DD SYSOUT=A
//SYSUDUMP DD SYSOUT=A
//DISKIN DD DSN=CC.TEST.IAM,DISP=OLD
//TAPE1 DD DSN=CC.TEST.BACKUP.IAM(+1),UNIT=TAPE,
// DISP=(,CATLG,DELETE),DCB=(CC.GDG----)
//SYSIN DD *
DUMP
/*
```

Example 2: CREATE operation. The following sample JCL creates the IAM file CC.TEST.IAM from the sequential tape backup called CC.TEST.BACKUP.IAM.

```
//CCCREATE JOB (CC,00),CC,MSGCLASS=A,CLASS=N
```

```
/*ROUTE PRINT CC
//STEP1 EXEC PGM=IAMUTIL
//SYSPRINT DD SYSOUT=A
//SYSUDUMP DD SYSOUT=A
//TAPE1 DD DSN=CC.TEST.BACKUP.IAM,DISP=OLD
//DISKOUT DD DSN=CC.TEST.IAM,UNIT=DISK,
// DISP=(,CATLG,DELETE),SPACE=(CYL,(10,2),RLSE)
//WORK DD UNIT=DISK,SPACE=(CYL,(1,1))
//SYSIN DD *
CREATE L=120,K=5,RKP=0
/*
```

When using the CREATE operation, the IAM file you are creating must no longer exist. Also, the following parameters may be specified on the control card:

L = record size (required)
K = key size (required)
RKP = relative key position (optional - default is 0)
I = integrated overflow (optional - default is 0% of the space requested for the file)
O - independent overflow (optional - default is 0 records)
PE - prime extension area (optional - default is 0 blocks)
OPTCD=L - requests logical delete byte support. To use this RKP must be 1 or greater. If this parameter is not coded, there is no logical delete byte support.

Example 3: RESTORE operation - The RESTORE operation can be used to restore an existing IAM file from a sequential backup. The following sample JCL restores the IAM file named CC.TEST.IAM from the sequential tape backup namedCC.TEST.BACKUP.IAM.

```
//CCRESTOR JOB (CC,00),CC,MSGCLASS=A,CLASS=N
/*ROUTE PRINT CC
//STEP1 EXEC PGM=IAMUTIL
//SYSPRINT DD SYSOUT=A
//DISKIN DD DSN=CC.TEST.IAM,DISP=OLD
//DISKOUT DD DSN=CC.TEST.IAM,DISP=OLD
//WORK DD UNIT=DISK,SPACE=(CYL,(1,1))
//TAPE1 DD DSN=CC.TEST.BACKUP.IAM,DISP=OLD
//SYSIN DD *
RESTORE
/*
```

The file's characteristics can be changed by coding them on the RESTORE control statement.

IEBCOPY

Example 1: The following sample JCL creates a tape backup named CC.BACKUP.PDS of the partitioned dataset named CC.PDS.

```
//CCPDSBKP JOB (CC,00),CC,MSGCLASS=A,CLASS=N
/*ROUTE PRINT CC
//STEP1 EXEC PGM=IEBCOPY,PARM='SIZE=9999999K',REGION=2M
//SYSPRINT DD SYSOUT=A
//SYSUT3 DD UNIT=DISK,SPACE=(80,(1000,500))
//SYSUT4 DD UNIT=DISK,SPACE=(256,(1000,500)),
// DCB=KEYLEN=8
//IN DD DSN=CC.PDS,DISP=SHR
//OUT DD DSN=CC.BACKUP.PDS,UNIT=TAPE,
// DISP=(,CATLG,DELETE)
//SYSIN DD *
COPY INDD=IN,OUTDD=OUT
/*
```

The SYSUT3 and SYSUT4 DD statements should be coded as is. These are work datasets. There is nothing sacred about the DD name IN and OUT. You may call these whatever you wish as long as the same is specified in the control statement.

Example 2: The following JCL restores the PDS called CC.PDS from the tape backup called CC.BACKUP.PDS. The PDS must no longer exist on disk.

```
//CCPDSRES JOB (CC,00),CC,MSGCLASS=A,CLASS=N
/*ROUTE PRINT CC
//STEP1 EXEC PGM=IEBCOPY,PARM='SIZE=9999999K',REGION=2M
//SYSPRINT DD SYSOUT=A
//SYSUT3 DD UNIT=DISK,SPACE=(80,(1000,500))
//SYSUT4 DD UNIT=DISK,SPACE=(256,(1000,500)),
// DCB=KEYLEN=8
//IN DD DSN=CC.BACKUP.PDS,DISP=OLD
//OUT DD DSN=CC.PDS,UNIT=DISK,DISP=(,CATLG,DELTE),
// SPACE=(TRK,(20,5,10))
//SYSIN DD *
COPY INDD=IN,OUTDD=OUT
/*
```

When restoring a PDS, you must know the amount of space required for the dataset, including directory blocks.

FDRDSF

Example 1: The following JCL dumps the dataset called CC.TEST.FILE to a tape backup called CC.TEST.BACKUP.FILE.

```
//CCBACKUP JOB (CC,00),CC,MSGCLASS=A,CLASS=N
/*ROUTE PRINT CC
//STEP1 EXEC PGM=FDRDSF
//SYSPRINT DD SYSOUT=A
//SYSUDUMP DD SYSOUT=A
//DISK1 DD UNIT=DISK,DISP=SHR,VOL=SER=DISK99
//TAPE1 DD DSN=CC.TEST.BACKUP.FILE,UNIT=TAPE,
// DISP=(,CATLG,DELETE)
//DD1 DD DSN=CC.TEST.FILE,DISP=OLD
//SYSIN DD *
DUMP DD=DD1
/*
```

The DISK1 DD statement must specify the volume serial # of the disk volume containing the dataset to be dumped. The TAPE1 DD statement must specify the output dataset. The DD1 DD statement specifies the dataset to be dumped.

Example 2: The following JCL will restore the dataset called CC.TEST.FILE from the tape
backup called CC.TEST.BACKUP.FILE.

```
//CCRESTOR JOB (CC,00),MSGCLASS=A,CLASS=N
/*ROUTE PRINT CC
//STEP1 EXEC PGM=FDRDSF
//SYSPRINT DD SYSOUT=A
//SYSUDUMP DD SYSOUT=A
//DISK1 DD UNIT=DISK,DISP=SHR,VOL=SER=DISK99
//TAPE1 DD DSN=CC.TEST.BACKUP.FILE,DISP=OLD
//DD1 DD DSN=CC.TEST.FILE,UNIT=DISK,VOL=SER=DISK99,
// DISP=(,CATLG,DELETE),SPACE=(TRK,(10,2))
//SYSIN DD *
RESTORE DD=DD1
/*
```

FDR can keep up with the space allocation needed for your dataset and you don't have to code it.

Note : If a particular disk pack contains multiple datasets for your agency that must be backed up, you may wish to dump all the datasets at once rather than one at a time. This may be accomplished by specifying only the DISK1 and TAPE1 DD statements and control statements as follows:

DUMP DSN=dataset name (for each dataset to be dumped)
or
DUMP TYPE=DSF,DSN=ALL to dump all datasets on a pack
or

DUMP TYPE=DSF
SELECT DSG=XX to dump all datasets starting with XX

FDR WARNING

FDR can now be used to backup unlike DASD device types; it is upward compatible. While FDR can backup and restore VSAM datasets, the Technical Support staff does not recommend using this feature. There are extra steps involved such as cataloging datasets and getting the alternate index copied. We recommend that IDCAMS be used for VSAM datasets.

NOTE CONCERNING ISAM

The Data Center no longer supports ISAM files. CICS has dropped ISAM support and IBM will eventually drop ISAM support altogether.

AGENCY BILLING REPORTS

All ITS mainframe usage is billed according to federal guidelines. Billing units consist of actual CPU usage, tape and disk I/O, disk residency time, tape residency, etc. Use the programs below to see detail billing. There are two programs located in CC.SORT.CARDS as described below:

CCPMACIR - produces a detailed report for the agency by CICS terminal ID and transaction ID. The first line of the report is a total line for the agency.

CCPMARPT - produces a detailed report for the agency that includes all other billing categories such as BATCH, TSO, etc.

Use the following JCL to run these programs:

```
//XXJOB JOB (XX,00),BILLING,MSGCLASS=X,CLASS=N,NOTIFY=XXXXXXXX
//* ---------------------------------------------------------------
//* PROVIDE A VALID JOB CARD ON THE LINE ABOVE
//* ---------------------------------------------------------------
/*ROUTE PRINT XX
//* ---------------------------------------------------------------
//* ON THE FOLLOWING LINE THERE ARE FOUR (4) SINGLE QUOTE MARKS IN
//* FRONT OF THE XX AND FIVE (5) AFTER IT.  REPLACE THE XX WITH YOUR
//* AGENCY CODE
//* ---------------------------------------------------------------
//S2 EXEC CCSAS,OPTIONS='SYSPARM=""XX"",REGION=8M
//SAS.WORK DD UNIT=DISK,SPACE=(CYL,(200,50),RLSE),
// DCB=(RECFM=FS,LRECL=6144,BLKSIZE=6144,DSORG=PS)
//SAS.SASLOG DD SYSOUT=*
//SYSIN DD DSN=CC.SORT.CARDS(CCPMARPT),DISP=SHR
//* ---------------------------------------------------------------
//* REPLACE THE XX IN THE FOLLOWING LINE WITH THE FISCAL YEAR
//* ---------------------------------------------------------------
//RECONDAT DD DSN=CCITS.PMA.FYXX.AGENCY(0),DISP=OLD
```

Replace XX with your agency code, XXXXXXX with the appropriate notify ID, and submit. When running the CICS report, replace PMAUBTCH with PMAUCICS.

If the reports produced by these programs are not detailed enough, you may copy the programs to your own PDS or Panvalet library and change them to meet your needs. On the next page is a layout of the reconciliation file for CICS and all other categories.

The datasets to be used are as follows:
For CICS - CCITS.PMA.FYXX.CICS.AGENCY(0)
For all other detail - CCITS.PMA.FYXX.AGENCY(0)
For previous months, use previous generations.

NOTE: Where FYXX is indicated, always use current fiscal year.

RECONCILIATION FILE LAYOUTS

The reconciliation file produced by PMA/Chargeback can only be read easily with EARL. We read the reconciliation file with EARL and produce a second file which is strictly a sequential dataset with RECFM=FB, LRECL=1500, and BLKSIZE=30000. Each cost center has unique reconciliation records. Programs written using the modified reconciliation file will need to use the file layouts described below:

COMMON FIELDS (excluding CICS)

Units	Columns 1-8	8 packed	precision 3
Rate	Columns 9-16	8 packed	precision 8
Charge	Columns 17-24	8 packed	precision 4
Agency Code	Columns 25-40	2 character	
Period	Columns 105-108	4 binary	(see note 1)
Element	Columns 135-150	16 character	(see note 2)
Qualifier	Columns 151-166	16 character	(see note 3)
Modifier	Columns 167-182	16 character	
ORDid	Columns 232-234	3 character	(see note 4)
Startstamp	Columns 235-252	18 hex	(see note 5)
Stopstamp	Columns 253-270	18 hex	(see note 5)

BATCH and TSO

Jobname	Columns 300-307	8 character	(logon ID TSO)
Programmer	Columns 354-373	20 character	
User Info	Columns 374-389	16 character	(see note 6)
Job Number	Columns 423-427	5 packed	
Priority	Columns 428-429	2 hex	
CPUtime (secs)	Columns 478-485	8 packed	precision 5
Tape I/O	Columns 547-553	7 packed	
DASD I/O	Columns 554-560	7 packed	

NETWORK

Resource name	Columns 365-372	8 character	
Bytes XMIT	Columns 409-414	6 packed	
Bytes RECV	Columns 415-421	6 packed	

LASER

# Pages	Columns 363-367	5 packed	
Jobname	Columns 398-405	8 character	

NATURAL

User ID	Columns 384-389	6 character	
Trans Count	Columns 390-393	4 packed	
CPUtime	Columns 394-397	4 packed	

ADABAS

Agency Code	Columns 365-366	2 character	
I/O Count	Columns 367-374	8 packed	
CPUtime	Columns 375-380	6 packed	
Facility	Columns 400-407	8 character	(Jobname or Term)

CICS is an entirely different file layout because of the volume of data that must be kept. The reconciliation file is actually a summary of each transaction on individual terminals each day. In other words, only one record is kept each day for the xxyy transaction on terminal zzzz.

	CICS		
Termid	Columns 1-4	4 character	
Tranid	Columns 5-8	4 character	
Qualifier	Columns 9-15	7 character	
Element	Columns 16-23	7 character	
#Trans	Columns 24-30	8 numeric	
Rate	Columns 32-39	8 packed	precision 8
Units	Columns 40-47	8 packed	precision 3
Charge	Columns 48-55	8 packed	precision 4
Period	Columns 56-59	4 binary	
Opid	Columns 60-63	4 character	

Note 1: Period is the FY accounting period. Period 1 is July, Period 2 is August, etc.

Note 2: Element is the cost center. Batch has three elements: CPU time, DASD I/O, and TAPE I/O. More information on elements can be obtained if necessary.

Note 3: Qualifier represents the different shifts for those elements where there is a cost differential for shifts.

@SHIFT1 is 8:00 A.M. to 5:00 P.M., Monday through Friday.
@SHIFT2 is the 5:01 P.M. to Midnight
@SHIFT3 is 12:01 A.M. to 8:00 A.M.
@WEEKEND is Saturday and Sunday.
DEFAULT will appear for elements that have no shift differential.

Note 4: ORDID is a three character field that represents the cost centers. MBJ is Batch, MTJ is TSO, MCT is CICS, TRM is ADABAS, and LAS is the laser printer.

Note 5: These time stamps are in the form yyyymmddhhmmsstttt.

Note 6: There will be multiple records on the reconciliation file for a single batch job or TSO session. The charges from these records must be totaled to obtain the charge for the job.

The fields such as CPU time, Tape I/O, etc. are duplicated on these records and only need to be obtained from one record. Records that belong to the same job will have the same job name and job number.

ADDRESSING CICS DATA AREAS IN LOCATE MODE

The following two examples show the old way and the new way with COBOL II. BLL cells and service reload are replaced by address special registers.

COBOL II does not require a length option in the read or rewrite commands. The length of rec-1 is implied. In the read command, you can code a length option if the records are neither fixed length nor (as in figure) self-defining. You can then get the length of the record from the field named in the length option.

In the rewrite command, you can code a length option if you want to replace the updated record with a record of a different length.

Old COBOL

```
WORKING-STORAGE SECTION.

77 LRECL-RECL     PIC S9(4) COMP.

LINKAGE SECTION.

01 BLLCELLS.
  02 FILLER            PIC S9(8) COMP.
  02 BLL-RECLA         PIC S9(8) COMP.
  02 BLL-RECLB         PIC S9(8) COMP.
  02 BLL-REC2          PIC S9(8) COMP.

01 REC-1.
  02 CTR         PIC 9(4) COMP.
  02 DATA        PIC X(20).
  02 FLD         PIC X(100)
       OCCURS 1 TO 50 TIMES
       DEPENDING ON CTR.

01 REC-2
  02.....

PROCEDURE DIVISION.

  EXEC CICS READ UPDATE...
     SET(BLL-RECLA)
     LENGTH(LRECL-RECL)
     END-EXEC.

  SERVICE RELOAD REC-1.

  IF LRECL-RECL > 4096
   THEN ADD 4096, BLL-RECLA
       GIVING BLL-RECLB.

MOVE CTR TO CTR.

  EXEC CICS REWRITE...
        FROM(REC-1) LENGTH(LRECL-RECL) END-EXEC.
```

COBOL II

```
WORKING-STORAGE SECTION.

LINKAGE SECTION.
01 REC-1.
02 CTR      PIC 9(4) COMP.
02 DATA     PIC X(20).
02 FLD      PIC X(100)
          OCCURS 1 TO 50 TIMES
          DEPENDING ON CTR.

01 REC-2.
     02

PROCEDURE DIVISION.

 EXEC CICS READ UPDATE...
          SET(ADDRESS OF REC-1)
          END-EXEC.

EXEC CICS REWRITE...FROM
          (REC-1)
          END-EXEC.
```

Modified: 07/14/2010

CICS CEDA TRANSACTION

The CEDA transaction is used to define PCT (transactions), FCT (files) and PPT (programs and maps) entries online. Each PCT, FCT and PPT entry must be added to a group. The groups must be added to a list the first time they are created. You must install a group after adding entries to it.

The list name for the TEST region is INITLIST.

An example of adding program CCTSTPGM, map CCTSMAP, file CCTSTFLE and transaction CCTS to the TEST region is listed below.

1. CEDA DEF PROGRAM(cctstpgm) GROUP(ccppt)
2. CEDA DEF PROGRAM(cctsmap) GROUP(ccppt) LANGUAGE(assemble)
3. CEDA I GROUP(ccppt) NOTE: This installs the group.
4. CEDA DEF TRANS(ccts) PROGRAM(cctstpgm) GROUP(ccpct)
5. CEDA I GROUP(ccpct)
6. CEDA ADD GROUP(ccppt) LIST(initlist) NOTE: Add only first time.
7. CEDA ADD GROUP(ccppt) LIST(initlist)
8. CEDA DEF(CCTSTFLE) GROUP(CCFCT) DSNAME(XX.XXX.FILE)
9. CEDA I GROUP(CCFCT)

OTHER CEDA COMMANDS

ADD - Adds a group to a list.

ADD GROUP(ccpct) LIST(initlist)

ALTER - Modifies the attributes of an existing entry.

ALTER PROGRAM(cctstpgm) GROUP(ccppt) You must install the group for the changes to take place.

DELETE - Erases entries.

DELETE ALL(*) GROUP(ccpct) Deletes all entries from group ccpct.
DELETE PROGRAM(cctstpgm) GROUP(ccppt) Deletes program cctstpgm.

DISPLAY - Shows the group or list names.

DISPLAY GROUP(*) Displays all groups.
DISPLAY GROUP(ccts*) Shows all groups starting with ccts.
DISPLAY LIST(*) Displays all lists.

VIEW - Show attributes of an existing entry.

VIEW PROGRAM(cctstpgm) GROUP(ccpct)

For more information about CEDA, go to the online help facility.

CIFILPGM TO CLOSE CICS FILES IN BATCH MODE

CIFILPGM can be used to close and disable files and open and enable CICS files.

```
//job card
//fil exec pgm=cifilpgm,
// parm=(jobname,action,fileid1,.....fileid7)
```

where:
JOBNAME is the CICS jobname (CICSDAY, CICSLS, etc.)
ACTION is C to close and disable and O to open and enable
FILEID is the ddname of the file(s) up to 7

CIMSGPGM TO SEND A MESSAGE TO A CICS TERMINAL

CIMSGPGM allows a batch job to communicate with a CICS user.

```
//jobcard
//msg exec pgm=cimsgpgm,
// parm=(jobname,terminal,
// 'message.....')
```

where:
JOBNAME is the CICS jobname (CICSDAY, CICSLS, etc).
TERMINAL is the CICS terminal-id to receive the message.
MESSAGE is the message to be sent and must be in quotes.
Maximum is 85 characters.

DESTINATION CONTROL REQUEST

The Destination Control Table (DCT) is used to describe to CICS the destination name and certain other characteristics of data that is transient to CICS (that is, to be processed by the Transient Data Control program).

Sequential extrapartition destinations are used for storing data external to the CICS partition/region or for retrieving data from outside the partition/region. Data stored for this purpose includes data received from terminals or other data created internally as the result of some transaction requirement identified by a user-written program. Extrapartition data may be both input and output data and is processed using QSAM.

Destination Control Table macro instructions are also used to specify intrapartition destinations. A single data set is used as intermediate storage for data to be directed to multiple intrapartion data destinations. Intrapartition data may be ultimately either transmitted upon request to the destination terminal or retrieved sequentially from the temporary data set for other uses. The user can specify, through the Destination Control Table, that a task is to be created when a certain number of records (trigger level) has been accumulated for an intrapartition destination.

For further information, contact the ITS Systems Staff at 601 359-2666.

REQUESTING A PROGRAM ADDITION TO CICS

The Processing Program Table provides a means for the user to describe to Program
Control the control information concerning the processing programs. In addition, Program
Control uses portions of each table entry to retain certain information for maintaining
control of the user's programs and to capture specified program statistics.

Fields which may be coded on the processing program table:

PROGRAM - Specifies the program identification, can be up to eight characters in
length. The indicated program must have been previously link edited into the real-time
relocatable program library (DFHRPL). "CCITS.CICS.JOBLIB" is the current DFHRPL
for the live system. You must call the Systems Staff before linking into it.

PGMLANG - Specifies the type of program. The default is PGMLANG=ASSEMBLER. Omit this prarmeter when preparing PPT entries for BMS maps regardless of the compiler used.

USAGE=MAP - Specifies that the entry describes a BMS map. USAGE=MAP should be specified for maps which are infrequently used. USAGE=MAP causes the map to be loaded into map storage instead of program storage. The storage used by the map is freed as soon as the map's use count reaches zero.

REQUESTING FILE ADDITIONS OR CHANGES

All files within CICS require an entry in the file control table. Request to add files to CICS or make changes to a file already in CICS are made by filling out a file request form. The top portion of the form is filled out as it would be for any disk request. The fields to be filled out in the CICS section follow:

DATASET - Specifies the symbolic data set name to be used as the control table entry for a specific data set. This dataset name can consist of one to eight characters in the CICS/TS System. Since this data set name is used when generating the system control block (DCB/DTF), it must be the same as the OS DDNAME used in the job control statement defining the data set.

RECFORM - Describes the format and characteristics of records on the data set. If this operand is omitted, the default is undefined. The format of the data set is described using one of the following parameters:

1. FIXED - Records are fixed length.
2. VARIABLE - Records are variable length.
3. UNDEFINED - Records are of undefined length.

The characteristic of the data set is specified using one of the following parameters:

1. BLOCKED - Records are blocked.
2. UNBLOCKED - Records are not blocked.

If the user of CICS/TS wishes to have the record format specified in the DCB, he must specify that value in the third parameter of the operand. For example:

RECFORM=(FIXED,BLOCKED,FB).

FILSTAT - Sets the initial status of the dataset. Valid Combinations:

(ENABLED,CLOSED) - DEFAULT. The file will be opened on first reference.

(ENABLED,OPEN) - The file will be opened by the automatically initiated transaction CSFU after CICS initialization, unless a user application or master terminal function has opened it first.

(DISABLED,OPENED) - The file will be opened automatically by CSFU at

CICS initialization, unless a user application or master terminal function has explicitly opened it first.

(DISABLED,CLOSED) - The file will be opened only by an explicit open request (EX: From the master terminal transaction).

Modified: 07/14/2010

REQUESTING TRANSACTION ADDITION OR CHANGE

The Program Control Table is the means for the user to describe the control information to be used by CICS for identifying and initializing a newly-arrived transaction. Task Control uses a portion of each PCT entry for the purpose of accumulating transaction statistics. The fields that may be coded on the program control table form follow:

TRANSID - Used to specify the four-character identification assigned to the individual transaction.

TWASIZE - Used to define the transaction work area required. A five-position decimal value that determines the size (in bytes) of the transaction work area to be acquired for this transaction. The default is **TWASIZE=O.**

PROGRAM - Used to define the initial program identification; this operand specifies the name of the program to which control is to be given to process this transaction.

TPURGE - Used to set the terminal error purge indicator. **TPURGE=YES** indicates that the terminal error purge indicator is to be set to allow the transaction to be purged when a terminal error occurs. The default is **TPURGE=NO**.

Note that **TPURGE=YES** should always be used to allow terminal error recovery.

SPURGE - Used to set the system stall purge indicator. **SPURGE=NO** indicates that the transaction may not be purged when a system stall condition is detected. The default is **SPURGE=NO**.

Note that **SPURGE=NO** should only be used on transactions that handle file updates.

NOTE: The most efficient way to request that your task not be made nonstallpurgeable is to issue the task control macro DFHKC TYPE=NOPURGE just before a GET FOR UPDATE or NEWREC and issue DFHKC TYPE=PURGE just after your put. See the CICS Application Programmers Guide for more information.

CATALOGED PROCEDURES

The following sections contain listings of the procedures by language or major category from 'SYS1.PROCLIB'. Both IBM and user versions are included. Listings of specific members of 'SYS1.PROCLIB' may be obtained by use of the IBM utility IEBPTPCH.

The following JCL may be used to obtain a listing of one member:

```
//JOBNAME JOB (HASP ACCOUNTING DATA),NAME,CLASS=A,
// MSGLEVEL=1,MSGCLASS=A
//STEP1 EXEC PGM=IEBPTPCH
//SYSPRINT DD SYSOUT=A
//SYSUT1 DD DSN=SYS1.PROCLIB,DISP=SHR
//SYSUT2 DD SYSOUT=A
//SYSIN DD *
  PRINT TYPORG=PO,MAXFLDS=1,MAXNAME=1
 MEMBER NAME=MEMBERNAME
RECORD FIELD=(80)
/*
```

Requests for changes to procedures should be coordinated through the Data Center, or submitted to them for consideration and/or implementation. It is suggested that requested changes to procedures be marked on a listing of the PROC and submitted to the Data Center. Changes normally should be limited to problem areas or to modifications agreed to by all users of the PROC's in question.

On the following pages are a list of frequently used procedures.

User PROC's are included in 'SYS1.PROCLIB' to meet special user agency requirements. These PROC's are added and/or maintained by each user agency using the IBM utility 'IEBUPDTE'.

ASSEMBLY PROCS

PROC NAME	DESCRIPTION	STEP NAMES
CCASMC	ASSEMBLER (H) COMPILE	ASM
CCASMCG	ASSEMBLER (H) COMPILE AND EXECUTE	ASM, GO
CCASMCL	ASSEMBLER (H) COMPILE AND LINK	ASM, LKED
CCASMCLG	ASSEMBLER (H) COMPILE, LINK AND GO	ASM, LKED, GO

ENTERPRISE COBOL FOR Z/OS COMPILE PROCS

PROC NAME	DESCRIPTION	STEP NAME
CCOBMCL	COMPILE –LINK	COBOL-LKED
CCOBMCLX	COMPILE – LINK With XPEDITER support	COBOL-CWPCDRVR-LKED

SORT PROCS

PROC NAME	DESCRIPTION	STEP NAME
DSORT3	DISK SORT - 3 WORK FILES	SORT
DSORT4	DISK SORT - 4 WORK FILES	SORT
DSORT6	DISK SORT - 6 WORK FILES	SORT
SORT	SORT - SYSLMOD, SYSLIN,& SYSUT1 DDS	SORT
SORTD	SORT - SORTLIB AND SYSOUT DD ONLY	SORT

LINK EDIT PROCS

PROC NAME	DESCRIPTION	STEP NAME
LKED	LINK	LKED
LKEDG	LINK AND EXECUTE	LKED, GO

MISCELLANEOUS SYSTEM PROCS

PROC NAME	DESCRIPTION	STEP NAME
RDR	READER - BLOCKSIZE = 80	IEFPROC
RDRA	AUTOMATIC SYSIN BATCH READER	IEFPROC
RDR3200	READER - BLOCKSIZE = 3200	IEFPROC
RDR400	READER - BLOCKSIZE = 400	IEFPROC
WTR	WRITER	IEFPROC
CCSAS	INVOKE SAS	

CICS COMPILE PROCS

ASSEMBLER

PROC NAME	DESCRIPTION	STEP NAME
CCCAMX	MACRO COMPILE	ASM
CCCAM	MACRO COMPILE-LINK	ASM-LKED
CCCAC	COMMAND LEVEL	TRN-ASM-LKED

COBOL

PROC NAME	DESCRIPTION	STEP NAME
CCCCMX	MACRO	COB
CCCCM	MACRO COMPILE-LINK	COB ASM PRT COMP LKED
CCCCC	COMMAND LEVEL COMPILE-LINK	TRN COB LKED
CCCCCE	COMMAND LEVEL	TRN COB LKED

COBOL II

PROC NAME	DESCRIPTION	STEP NAME
CCC2C	COMMAND LEVEL COMPILE-LINK	TRN COB2 LKED

COBOL/390

PROC NAME	DESCRIPTION	STEP NAME
CCCLTSX	COMMAND LEVEL	TRN-COBOL-CWPCDRVR-LKED
	COMPILE-LINK With XPEDITER support	

MISCELLANEOUS

PROC NAME	DESCRIPTION	STEP NAME
CCCMAPA	ASSEMBLE MAP ONLY	ASM
CCCMAPD	LKEDIT MAP & PUNCH DSECT	ASM PREP ASM LKED

ITS DATA CENTER POLICIES

Over the years certain rules and guidelines have had to be established to insure equitable access to Data Center services by all users. Most require agencies to assume some standards. The Director of the Data Center as needs arise sets these standards. The standards, if followed, insure each user that their jobs will run and their problems will receive immediate attention if they occur. The Data Center does not have the staff to spend time with problems outside the scope of this manual. Specific guidelines follow:

1. Program problems will not be resolved unless compiled with Data Center procedures.

2. The Service Desk should solve all problems presented to it within 24 hours. Any user believing his problem has taken too long can contact the Data Center Director.

3. Software packages brought in from outside sources will require an additional charge if the Technical Staff is required to install it.

4. The Data Center will backup weekly shared resources (PROCLIBS, SORT CARDS, etc) and will back up any xx.JOBLIB or XX.SOURCE.LIBRARY if they are on the disks they were supposed to be.

5. The Data Center is for active datasets. Datasets not used on a regular basis should be dumped to an offsite tape and stored away from the Data Center.

DD CARD CODING

The following sections discuss standards for some of the parameters on the DD cards. Many DD parameters may also be supplied by the JES2 output card. Refer to the section in this manual on the output card or to your JCL manual.

UNIT PARAMETER
Because the system dynamically allocates peripheral devices and because there are many different devices within a given device class, it becomes necessary to give special unit parameter names to these device classes.

When referring to data sets on tape units, use any of the following names in the unit parameter field:

UNIT=TAPE - Tape Cartridge located in the Virtual Tape System (Default).

UNIT=TAPE36 - Any tape used in the Silo or for an offsite tape.

UNIT=TAPE98 - Tape 9840 used in the silos. Cartridge is 20GB.

UNIT=TAPEIBM - A 3592 tape used in the Virtual Tape System.

When referring to data sets on disk units, use either of the following names in the unit parameter field:

UNIT=DISK - Any direct access unit

UNIT=MSS - when dataset resides on 3390 device used for generation data groups *

Coding the actual device name could result in serious problems if the system is upgraded and these devices are no longer available.

Do not code UNIT=CUU where "C" represents the channel number and "UU" represents the device number on the channel. Coding unit parameter in this manner may result in the abnormal termination of the task.

SPECIAL NOTE : When using IEHPROGM to catalog datasets care must be taken when specifying 'DEVICE-TYPE'. Always use specific unit types.

FOR EXAMPLE: To catalog a disk dataset, use:

CATLG DSNAME=AA.DISKFILE,VOL=3390=DISK50

Do not use:
CATLG DSNAME=AA.DISKFILE,VOL=DISK=DISK50

To catalog a tape dataset, use:
CATLG DSNAME=AA.TAPE,VOL=3490=(AA0000,1)

Do not use:
CATLG DSNAME=AA.TAPEFILE,VOL=TAPE=(AA0000,1)

Modified: 07/13/2010

JOB CARD CODING

Since the Data Center is serving several user agencies, the accounting for the computer usage must be precise in nature. Every run submitted to the Data Center must have a job card which adheres to the requirements set forth in this section.

The following is the JOB card format:

```
//jobname JOB (aatp,uuuu,JES2 PARMS1),prog-acct,OS options1
```

In the example of the general job card format shown above, the following explanation is given for the fields:

Jobname - (Program & Job Naming Conventions) for the proper coding of this field.

Accounting parameters - Only the programmer accounting data (AATP) and the programmer room number (UUUU) must be specified.

AA - Agency identification code, refer to "List of Agency Users"

T - Run type code denoting the type of run as follows:

CODE	DESCRIPTION
0	Designates use of the Center's librarian
1	Compilation of a non-librarian program
2	Testing of a program or system
3	Normal production
4	Production rerun due to operator error
5	Production rerun due to user error
6	Production rerun due to hardware error
7	Production rerun due to software error
8	Central systems staff maintenance
9	IBM FE services or other IBM jobs

P - Programmer code, if an '0', the "PROG-ACCT" field is assumed to contain the programmer's name; otherwise, if the programmer code field is other than '0', the "PROG-ACCT" field is assumed to contain an agency account number.

UUUU - Any user assigned field; however, the field must be coded.

Examples of uses are: Room number, Telephone extension, etc.

JES2 PARMS - JES2 requires that the user specify the accounting information in the following format:
(TIME, LINES, CARDS, FORM, COPIES, LOG, LINECNT),

TIME - This field specifies the estimated execution time in minutes and may consist of from one (1) to four (4) numeric digits. If this parameter is omitted, a standard default of 30 minutes will be assumed.

LINES - This field specifies the estimated line of print in thousands and may consist of from one (1) to four (4) numeric digits. If this parameter is omitted, a standard default of 10,000 lines of output will be assumed.

CARDS - This field specifies the estimated number of cards to be output. It can consist of from one (1) to four (4) numeric digits. If omitted, the standard default is 100 cards of output.

FORMS - This field specifies special forms required for printing of the entire job and may consist of from one (1) to four (4) numeric digits. If omitted, a standard form number for one part paper will be assumed.

COPIES - This field specifies the number of times the print output is to be printed. It may consist of up to two (2) numeric characters. If omitted, one copy of printed output will be assumed.

LOG - This subfield specifies the user's choice of the JES2 log option. If this character is a "N", the log option will be suppressed. If omitted, the log will be produced.

LINECNT - This field specifies the number of lines to be printed per page and may consist of up to two (2) numeric characters. If coded as "0" (zero) no automatic overflow will be produced. If omitted, a standard value of 60 lines per page will be assumed.

PROG-ACCT - This field (from one to twenty characters) contains either the programmer's name (if the programmer code contains a zero) or any agency assigned account number (if the programmer's code field contains anything other than zero).

OS OPTIONS - Refer to the Job Control Reference manual for details of the use of the keyword parameters of the job card. For information on class refer to (JOB CLASS ASSIGNMENTS).

The following are examples of job cards specifying accounting information in the

HASP accounting format:

```
//SAMPLE1 JOB (TC10,JOB1),TAX.COMM,MSGLEVEL=1,CLASS=D
```

In this example:

AATP = TC10
UUUU = JOB1
time = 30 minutes (assumed)
lines = 10,000 lines (assumed)
cards = 100 cards (assumed)
forms = standard (assumed)
copies = 1 copy (assumed)
log = YES (assumed)
linecnt = 60 lines per page (assumed)

```
//SAMPLE2 JOB (HD5A,6312,5,10,,0056,,,42)'7412-866-864',
// MSGLEVEL=(2,0),CLASS=F,COND=(16,EQ)
```

In the preceding example:

aatp = HD5A
uuuu = 6312
time = estimated 5 minutes
lines = 10,000 lines estimated
cards = 100 cards (assumed)
forms = 5 part standard size 6 lines per inch
copies = 1 copy (assumed)
log = YES (assumed)
linecnt = 42 lines per page

It is to the user's advantage to code the "time" and " lines" subfields if these values are known. If the user takes the default value and his job exceeds these values, it may cause the job to be canceled. *

The following JES2 parms can be alternately supplied with the JES2 JOBPARM control card: cards, copies, forms, linect, lines, nolog, room, time. Refer to your JCL manual or to the JOBPARM section for details of JOBPARM coding.

*** CURRENT DATA CENTER POLICY**:
If your job is over 500,000 lines your job will be canceled. If expected output is over 500,000 lines, contact the Technical Services Help Desk. Jobs that exceed time are not canceled.

JOB CLASS ASSIGNMENTS

The following table of job classes should be used when coding the class parameter of the job card for any jobs to be processed by the Data Center. Job classes on production work are assigned on the basis of the maximum number of tape drives allocated simultaneously by any one step of the job.

JOB CLASS	JOB DESCRIPTION
A	Allocates no tape units
N	Allocates 1 tape unit
B	Allocates 2 tape units
C	Compilations and Panvalet - NO TAPES
D	Allocates 3 tape units
E	Allocates 4 tape units
F	Allocates 5 tape units
G	Allocates 6-12 tape units
L	Panvalet - short runs only
P	PROCLIB or other PDS updates, CATALOG maintenance using IEHPROGM, IEHLIST - NO TAPES
Z	Production CICS systems
X	Production ADABAS systems

Any other class is illegal or special*

The initiators of the system will be organized by the system operators in such a way as to produce the maximum through-put with consideration of the current job mix in relation to the current system environmental factors.

Jobs with illegal or incorrect CLASS PARAMETER CODE will be canceled with no notification to the user.

From time to time there will be special circumstances which necessitate a class not normally used to be inserted into the system initiators. If you have not been authorized to use this special class, please do not use it or your job will be canceled.

Modified: 07/13/2010

JOBPARM CARD

The JOBPARM statement specifies job related parameters for JES2.

The JOBPARM statement consists of characters /* in columns 1-2, the work JOBPARM in 3-9, a blank in 10 and parameters in 11-71. Columns 72-80 are ignored. Any number of parameters may be specified on 1 card and as many cards as desired may be used.

Code one or more of the following parameters using either the long form of the parameter or the short form listed below it:

Cards=NNN C=NNN	,Copies=NNN ,N=NNN	,Forms=XXX ,F=XXX	,Linect=NNN ,K=NNN
,Lines=NNN ,L=NNN *	,Nolog ,J	,Room=XXX ,R=XXX	,Time=NNN ,T=NNN

* Any value coded over 2000 will be forced to 2000. If you plan to output more than 2 million lines, contact the Data Center at 359-1403.

For more information, refer to MVS JCL Reference .

MESSAGE STATEMENT

The /*MESSAGE statement gives the user the ability to log information to the system console at the time the job is being read in. The /*MESSAGE card may be placed anywhere in the input job stream. If the message statement appears within a job, the JES2 assigned job number will be appended to the message when it appears on the console log. The format of the message statement is:

```
0    0    1    11                                    7
1    5    0    56  ---  THROUGH COLUMN ---           2
```

/*MESSAGE USER'S MESSAGE

Where columns 16-72 contain any information the user desires to have printed on the console. There is no limit to the number of message statements that may be present in the input job stream. If the message statement appears outside the boundaries of a job, the input device number is appended to the message.

OUTPUT CARD

The output card specifies characteristics and/or options of a specific SYSOUT data set or group of datasets. The output card consists of /* in columns 1 and 2 and output in columns 3-8, and a code beginning in 10 followed by 1 or more parameters. Columns 72-80 are ignored. An * as the code in subsequent output cards indicates a continuation of the previous card. The code specified will be the same code put in the DD card for forms.

EXAMPLE:

```
/*OUTPUT ABC DEST=RMN
        "
        "
        "
//ANYNAME DD SYSOUT=(A,,ABC)
```

Valid parameters are:

```
COPIES=NNN  ,FCB=XXXX  ,FORMS=XXXX  ,UCS=XXXX
N=NNN       ,C=XXXX    ,F=XXXX      ,T=XXXX

DEST=XXXX
D=XXXX
```

NOTE: DEST may specify up to four different destinations by placing them in parenthesis and putting a comma between them. However, many copies are specified for that dataset will be sent to each destination.

ROUTE STATEMENT

The /*ROUTE statement gives the user the option of specifying the location to which his output is to be routed. The /*ROUTE card should be placed immediately after the job card and have the following format:

/*ROUTE	PRINT	LOCAL
	OR	RN
	PUNCH	RMN
		RMTN
		AA

Where "PRINT" and "PUNCH" specify the class of output to be routed, "LOCAL" specifies that a local (within the Center) device will contain the output, "NN" designates a remote (RJE) terminal device that will contain the output. AA is the agency code of the agency whose RJE you wish your PRINT/PUNCH to go to. CC is the same as LOCAL. If both PRINT and PUNCH are to routed, two /* ROUTE cards must be coded.

SETUP STATEMENT

The /*SETUP statement is used to notify the operator of the volume serial numbers of the data sets needed to process the incoming job. The volume serial number punched in the card will be displayed on the console. Two considerations in the use of the /*SETUP card are:

1. The job is placed in HOLD status (not to be scheduled for execution) until the operator "RELEASES" the job with a JES2 command from the console.

2. The /*SETUP card is continued not with another /*SETUP card but with a /*MESSAGE card.

The format of the /*SETUP card is as follows:

```
0 0 1 1                                   7
1 5 0 2 --- THROUGH COLUMN ---            1
```

/*SETUP VOL-SER,VOL-SER2 ...,VOL-SERN

Where columns 12 through 71 contain the 6 character volume serial numbers of the data sets necessary for the job to run. The /*SETUP card must come between the job card and the first EXEC card in the input stream.

SYSIN/SYSOUT DD STATEMENTS

JES2 recognizes the standard form of the DD statements when specified as:

```
//DDNAME DD SYSOUT=class
//DDNAME DD SYSOUT=(class,,xxxx)
```

And 'SPOOLS' the given input or output. When coding the "DD *" option the user should not code DCB parameters, e.g.:

```
//DDNAME DD *,DCB=BLKSIZE=80
```

Except if you use more than four "DD *" in the same job, then you should use a DCB parameter on each statement. Also a DCB parameter should be placed on a "DD *" statement when ten or less data cards are included.

The OS spooling option has been generated with the JES2 system and HASP, upon encountering the above DD card, will release the spooling function to OS. This could cause a degradation in the efficiency of program execution.

In the DD card specifications:

```
//DDNAME DD SYSOUT=class
//DDNAME DD SYSOUT=(class,,XXXX)
```

"class" can be specified as a through Z and/or 0 through 9 giving the user thirty-six available output classes. The user should take into consideration the fact that some of the classes have special functions as described in (SYSOUT CLASS CONSIDERATIONS).

SYSOUT CLASS AND FORM CONSIDERATIONS

With the installation of the laser printer at the Data Center, it has eliminated the need for special pre-printed forms. However, printing on special forms can still be accomplished at the Data Center. With special software, forms are designed and down-loaded to the laser printer. At the time the reports are printed, the designed form is dynamically flashed along with the variable data to produce the special form.

The format to be used when coding SYSOUT DD statements is:

```
//DDNAME DD SYSOUT=(C,RRRRRRRR,FFFF)
```

Where:

C = Sysout class, (see list below)

RRRRRRRR = The eight digit report name is defined in CA-DELIVER. The first two digits of this report name must be the two digit agency code for your agency. (ex: CCMYREPT,SEMYLIST)

FFFF = (See the list below for forms which are available at the Data Center.) Any form name may be coded if the form is to be printed at your agency.

SYSOUT CLASSES:

CLASS	**FORM**
A	STD
L	STD
X	TSO HELD OUTPUT
Z *	STD
R	Deliver
V	View
W	View tape
O	FMview
U	Fmview tape

* Output will print only if the job finishes with a non-zero return code.

FORM NAMES

FORM	**DESCRIPTION**
STD	8 1/2" x 11" white three-hole paper
NOHO	8 1/2" x 11" white no-hole paper
LEGL	8 1/2" x 14" white no-hole paper

DFHSM

DFHSM will handle the various types of SMS datasets in the following manner:

1. Temporary Datasets - These SCRATCH datasets will not be backed up or migrated to tape. These datasets will be deleted after one day.

2. Test Datasets - These datasets will not be backed up to tape. The test datasets will be migrated from their current disk to a ML1 volume (disk) after 30 days of non-usage. If the dataset has not been used in 45 days it will be migrated to a ML2 volume (tape). If the dataset has not been used in 120 days, it will then expire (be deleted).

3. Restart Datasets - These datasets will not be backed up or migrated to tape. These datasets will be deleted after seven days.

4. Permanent Datasets - These datasets will have an incremental back up (daily), except on Wednesday and Saturday. Full volume dumps are done on Wednesdays and Saturdays. The Wednesday full volume backup remains onsite and the Saturday full volume backup goes offsite. The permanent datasets are migrated to a ML1 volume (disk) if the dataset has not been used in 30 days. If the dataset has not been used in 45 days, it will be migrated to a ML2 volume (tape). These datasets will not be deleted, unless the user deletes it or the user requests that it be deleted.

5. Generation Data Groups - These datasets will have daily incremental backups. This means when you create a new GDG or change a GDG, DFHSM will make a backup. The latest five generations will remain on disk while the remaining GDGs will be migrated to a ML2 volume (tape). The GDGs are deleted only by the user or when the GDGs have rolled off.

The datasets which are migrated can be retrieved by referencing the dataset in TSO or running a batch job. If you reference the dataset through TSO, you will get a message saying the dataset is being recalled and a tape mount has been issued. Once this has finished, your dataset is back on disk and the cycle described above begins again.

If you have any questions, please call the Technical Services Desk at 601

359-2666.

SMS MANAGED DATA SETS

One important note- SMS does not support uncataloging of data sets.

For this reason, when getting rid of a data set that is no longer being used do the following:

1. Use DELETE not UNCATLG

2. DO NOT USE DEL NOSCR This is the same as uncataloging the dataset

If you have any questions concerning SMS call Lawrence McCaleb at 601 359-9587.

SMS UPDATE

There has been some question about the disposition of the disk GDGs that are under SMS. What is deferred and roll-in? This is explained below.

New SMS-managed generation data sets are cataloged in a deferred roll-in status when created. This means that they are temporarily cataloged by their GxxxxVyy number but an entry is not made in the GDG base at this time. Then at step termination, the generations are processed depending on their normal termination disposition as described in the following paragraphs.

DISP parameter: Assign new generation data sets a status of NEW and a normal termination disposition of CATLG, KEEP, DELETE, or PASS.

DISP=(NEW,CATLG): At step termination, the deferred generation data set is rolled into the GDG base. This means that the temporary catalog entry is removed and an entry is made in the GDG base.

DISP=(NEW,KEEP): At step and job termination, the deferred generation data set remains in a deferred roll-in state. This means that the temporary catalog entry is not removed and an entry is not made in the GDG base.

DISP=(NEW,DELETE): At step termination, the deferred generation data set is scratched and uncataloged.

DISP=(NEW,PASS): At job termination, the deferred generation data set is scratched and uncataloged.

NOTE : If you create a new generation data set and a deferred generation data set exists with the same GxxxxVyy number, the number and its associated space are reused.

Modified: 07/13/2010

DB2 SECURITY

DB2 has its own internal security that provides for controlling access to all DB2 resources. These include PLANS, DATABASES, STORAGE GROUPS, TABLESPACES, TABLES, etc.. You have the option of controlling access to the DB2 subsystems themselves via RACF, but we do not have this implemented. A user would have to have the appropriate datasets in their logon procedure in order to access the DB2 subsystem from TSO. Any sensitive data is protected within DB2 itself so this should not be an issue.

A user must have the appropriate administrative authority in order to issue GRANTS and REVOKES. Users that are defined as SYSADM can perform all functions on all DB2 resources. Initial SYSADM IDs are defined in the DSNZPARM module for DB2. A user that is defined as SYSADM, however, can grant SYSADM authority to another user. A user can be granted DBADM authority on a particular database or multiple databases. This will allow the user with DBADM to do database maintenance on those particular databases.

There are quite a few different DB2 Administrative Authorities which I will not list here. Page 3-18 in Volume I of the Administration guide gives a detailed listing of all of these.

If you have any questions on DB2 security, call the Data Services Help Desk 601 359-5959.

Modified: 07/13/2010

ITS DATA CENTER EXTERNAL SECURITY

As our operation continues to grow and become more complex, it is imperative we face up to the inherent responsibilities that go with being the custodian of a vast data bank and statewide data network.

The Data Center employs several methods to detect unauthorized access. Agencies are entrusted with certain privileges that may be removed if violations of security are discovered.

Our users are entitled to the protection of their files against physical threats as well as unauthorized modification and dissemination of privileged information.

Each of the Data Center employees carries a photo security badge. The primary purpose of this card is to gain access to the Data Center during regular business hours, nights, weekends and holidays.

For those who bring in work to be processed at the Data Center, an I/O window has been provided for this purpose. Agencies using pre-numbered forms, or other documents requiring accountability, will be asked to furnish a transmittal slip indicating total number of forms/documents submitted. This will be necessary before processing your job. Printouts too bulky for the window will be delivered to the I/O area by our operations staff. The telephone located in the I/O area will allow communications with operations personnel.

Occasionally we are requested to conduct tours of the Data Center for various groups. We are always happy to do this, provided we receive advance notification. Please contact the Operations Manager (Steve Phelps) at 601 359-2652 if you want to set up a tour.

Modified: 07/13/2010

ITS MAINFRAME SECURITY POLICY AND STANDARDS

RACF (Resource Access Control Facility), OR Security Server as it is now called, is a security system that allows for the

- Definition of users and groups
- Definition of resource profiles
- Control of resource access
- Auditing of violations

Definition of Users and Groups

Each agency is divided into a group called xxDIV, where xx is the agency code. Within the group are subgroups that contain userids. These subgroups allow the flexibility of permitting a certain group of users to a specific resource.

There is a security administrator and backup administrator at the State Data Center that is "System Special". This allows this administrator to administer security to all agencies. Most of the larger agencies have a security administrator that is "Group Special". This allows this administrator to administer security only to the group and subgroups that they are "Group Special".

Definition of Resource Profiles

Resources are protected by profiles, either discrete or generic. When using discrete profiles, a profile will be set up for each resource. When using generic profiles, one profile can be set up for many resources. Generic profiles are recommended.

Control of Resource Access

After profiles have been defined, users and or groups can be permitted access to it. The access can be ALTER, CONTROL, UPDATE, or READ.

Auditing of Violations

All violations are written to the SYSLOG and to the SMF files. A violation and audit report is generated several times daily. This is helpful in determining the problem when a user calls.

Possible RACF requests:

1. **Need new userids defined.** Please include your agency name, agency code, contact person and phone number, and a list of the names of the people needing a userid defined. If this is for TPX access, please list the applications needed, or give an existing userid to model this one after.

2. **Need an agency code defined for a new agency doing business with ITS, or for an existing agency.** Please send a request on agency letterhead requesting that your agency be able to connect and do business with ITS. This request should include the billing address, list of the names of people needing a userid defined, what applications these users need, and the name of a contact person.

3. **Need to give someone access to a dataset** . Please send a request stating that the following userids or groups need access (read, update, alter, etc) to the following dataset. Example: Please give XXusr01 read access to ZZ.TEST.FILE or give XXdept update access to YY.PROD.FILE. If you need access to a file that does not belong to you or your agency, then a written request should come from the agency that owns that file. Example: If your userid is XXusr01 and need read access to ZZ.TEST.FILE, where ZZ is another agency, you will need to contact someone at ZZ agency and get them to send a request to the ITS Security Administrator giving your userid permission to access their file.

4. **My userid is revoked, or I have forgotten my password**. All passwords are encrypted, therefore, the security administrator must reset the password and/or resume the userid. To resume a userid means to unrevoke the userid without changing the password. If the password is reset, then the new default password will expire upon immediate use and force the user to enter a new eight (8) alphanumeric password. It is also recommended that passwords expire every ninety (90) days.

5. **Employees Leaving an Agency** ITS should be notified, in writing, to change the password and revoke the user-id. This procedure ensures that the employee will not be able to access the system from a remote site. Security problems and/or questions should be directed to the Data Services Desk at 601 359-5959.

RACF mainframe security requests should be in writing. This should eliminate any confusion and provide documentation if needed. All RACF written requests should be sent to:

ITS Mainframe Security Administrator
MS Dept. of Information Technology Services

301 N. Lamar St., Suite 508
Jackson, MS 39201

NATURAL SECURITY

Natural Security is an add-on to the Natural programming language that is used to secure access to the various application libraries within Natural. This product does **not** interface directly with RACF and is normally used within those environments where RACF protection is not turned on. It is, however, used as a supplemental product that is subordinate to RACF in some cases.

User IDs are defined to Natural Security by logging onto the application SYSSEC in Natural - one must be defined as an administrator to Natural Security and linked to (given permission to use) the SYSSEC application in order to do this. The user ID is 1 - 8 bytes in length and may be character, alpha, or national. We use the convention that all user IDs start with the 2-byte agency code with 4 - 6 more characters to identify the application and user number (where feasible).

User IDs in common use are of 4 major types - Member, Person, Administrator, and Group - with differing requirements and capabilities associated with each.

Groups are just that - groups of other types of IDs that can be linked with specific permission and characteristics to an application library. A Group may be linked to any number of applications but are commonly only linked to a single application with a specific startup program and set of permission defined for users of a specific task or type.

Members are IDs that define a person or batch job and must be a member of a group in order to be able to do anything within Natural. An ID of type member may belong to as many groups as desired. If a Member belongs to no group at all, the ID is known but may not do anything.

Persons are individuals or batch jobs that may be part of a group or linked separately to an application, or any combination thereof. Administrators are much like a Person with the added capability of becoming a security administrator or the owner of an application or other objects.

Another major type of Natural Security object that we use is the Library. A library contains a set of programs for a specific agency or an agency' s application. A library may be defined as protected by user id or terminal id or both; or the library may be defined as unprotected and any user defined to Natural Security may log onto it.

Users of type Group, Person, and Administrator may be linked to a library using the default definition created when the library is created or they may be linked A special @ in order to change the defaults. Among the things that can be defined either as default or special are : the program to be executed immediately upon login for any given user or group; whether or not the user or group is allowed to reach the command line to issue Natural commands such as edit, stow, etc; whether or not a user/group may view or change the source of the programs within the library; what system limits or time-outs are to be changed from the installation default; the STEPLIB sequence for programs not found in the application library.

The last commonly used Natural Security object we have is of type File. Any file defined to Natural - normally Adabas, but potentially of other types - must be defined to Natural Security before it may be used by any Natural program.

Files may be defined as Public - anyone in any application may read and update the file freely; Access only - anyone in any application may read the file but no one may update at all, or Private - only those applications that the file is specifically linked to may do anything with the file.

In order to subordinate Natural Security to RACF, we use the following scenario:

1) The user is defined to Natural Security with the same ID that is used for RACF,

2) the user is required to use one of the CICS regions where RACF is active,

3) the Natural/CICS module is defined with the parameter AUTO=ON to tell Natural Security to pick the user ID from the ACE block and bypass password checking because it has already been checked by a more robust product,

4) the user ID must have a default library defined, must be linked to the library or be in a group that is linked to the library, and the link must specify a startup program.

The Natural Security environment in use for a particular transaction/CICS region is dependent on the Natural/CICS module that is in use and upon any overrides specified in the SYSPARM library for the transaction. In HPCICS, for example, the normal users use the transaction A DLS @ after signing on through RACF. They are taken immediately to the main menu screen for the Drivers License system. A different set of users invoke the transaction A NASE @ and are taken to the Secretary of State' s menu set aside for their use. The DLS users are defined in a separate Natural Security file reserved for the drivers license system while the NASE users are defined in the Natural Security file used by the common state environment.

Currently, only Eddie can maintain the common environment' s Natural Security and are also defined as backups capable of working in **all** of the Natural Security environments. Highway Patrol, SPAHRS, and the various DHS projects maintain their own security and should be the first contact on simple problems involving login and password problems.

INITIALIZING & HANDLING OFFSITE TAPES

The user is to make sure their offsite tapes are at the Data Center and have been initialized before your job is to be submitted. Once your job has been submitted and is executing, there is not a way to initialize your tape at that time. The job will have to be canceled.

NOTE: If the tape is not at the Data Center, or has not been initialized previous to the mount, the job will be canceled.

OFF-SITE TAPES

Due to the number of tapes brought into the Data Center for processing, it is virtually impossible to house them in an orderly manner. We have a process at the Data Center that identifies user tapes that are in the SILO that have not been referenced in 35 days. This process is done every Monday morning. These tapes are pulled from the SILO and the user is called to pick up their tapes.

The Data Center should not be considered as an offsite storage center. Any offsite tapes should be housed at your site or you can make arrangements to have them housed at Archives and History.

The operators will label tapes as required for Data Center users. The volume serial number, however, must begin with the two character agency code.

SCRATCH TAPES

The tape scratching procedure is straight forward in design and application. It uses the tape library management file and the user catalog which is maintained by OS. This job is ran, as needed, to generate a list of scratch tapes for immediate use. The listing which goes to a user is 'AFTER-THE-FACT', and really indicates that the tape is already scratched.

1. TLMS will check to see if a tape has been used in the last 30 days. If the tape has not been used in the last 30 days, TLMS will check to see if 180 days have passed from creation date for GDG's and 60 days for NON-GDG's. If this time span has passed, the tape will be scratched; otherwise, the tape will remain cataloged until it meets this criteria.

2. All active tape numbers that do not match any catalog number are written to a scratch tape list. Simultaneously, the tape library management file is adjusted to show that the tape is available to scratch.

3. The scratch tapes are listed by volume serial number for the operators. Tapes which have accumulated an excessive number of errors are flagged so that they can be cleaned and certified before being used again.

4. The scratch tapes are listed by agency. Those agencies with remote terminals will receive their listings inhouse. Other agencies must pick up their scratch tape list from the Data Center.

FREQUENT ABEND CODES AND EXPLANATIONS

On the following pages we have a list of the most common abend codes that users receive, along with some common causes. This can help save you time in finding your problem.

If you need additional information or receive other abend codes you can consult your "MESSAGES AND CODES" manual for further help.

If you need to look up the explaination for any IBM message or code and do no have the manuals available, IBM now has a web based message lookup. The current address of the web page is:
http://www-1.ibm.com/servers/s390/os390/bkserv/lookat/lookat.html
As this address might be subject to change, you can always search for the terms "IBM LOOKAT MESSAGES" and the search engines should return the correct web page at or near the top of the list. Once at the LOOKAT Messages page, just key the error message in the message id box, and then click on the Z/OS V1R7 radio button and then click on the GO button to retrieve the text of the message.

COMMON ABEND COMPLETION CODES

S0C1 : Operation Exception (i.e., an invalid operation code).

COMMON CAUSES:

1. A missing (or misspelled) DD statement.
2. Attempting to read from a data set that has not been opened.
3. A subscript or index error which caused a portion of code to be overlaid, resulting in an attempt to "EXECUTE" data.

S0C4 : Protection Exception - Attempting to overwrite a protected area in storage.

COMMON CAUSES:

1. Invalid subscript or index.
2. Inclusion of a stop run statement in the input or output procedure of the sort verb.
3. Missing or misspelled DD statement.
4. Block size and record size specified as equal in a variable length file.

S0C7 : Data Exception - Data in a field was of incorrect format for this instruction attempting to process it.

COMMON CAUSES:

1. Failure to initialize a counter.
2. Invalid incoming data (e.g., blanks, decimal points, or commas in a numeric field).
3. Exceeding a table via a subscript (index) error, causing a reference to invalid data.
4. Moving zeroes or low-values to a group field defined as numeric.
5. An omitted or erroneous usage clause.
6. Passing parameters between programs in the wrong order.

S0CB : Decimal Divide Exception (Division by Zero).

COMMON CAUSES:

1. A COBOL divide or compute statement has a divisor of zero.

S001 : An uncorrectable input/output error that is sometimes attributable to DCB conflicts.

COMMON CAUSES:

1. Attempting to read from a file after the at end condition has been encountered.
2. A device malfunction, or a damaged (dirty) tape or disk.
3. Wrong-length record of physical block.

S222 : Cancellation of job by the operator.

COMMON CAUSES:

1. Program exceeded specified time (possibly a loop).

S2F3 : The job was running when a system failure occurred. A system restart was performed; a system job queue entry for the job existed at the time of failure.

PROGRAMMER RESPONSE: If results of the job are unsatisfactory, resubmit the job or job steps, as desired.

S806 : A requested program could not be found.

COMMON CAUSES:

1. Missing JOBLIB or STEPLIB statements.
2. Misspelled module name.

SB37,SD37,SE37 : Space Problems; Insufficient space available for an output data set.

COMMON CAUSES:

1. An infinite loop containing a write statement.
2. The space requested was insufficient.
3. Sufficient space was requested but was not available on the volume specified.

NOTE: More space should be allocated.

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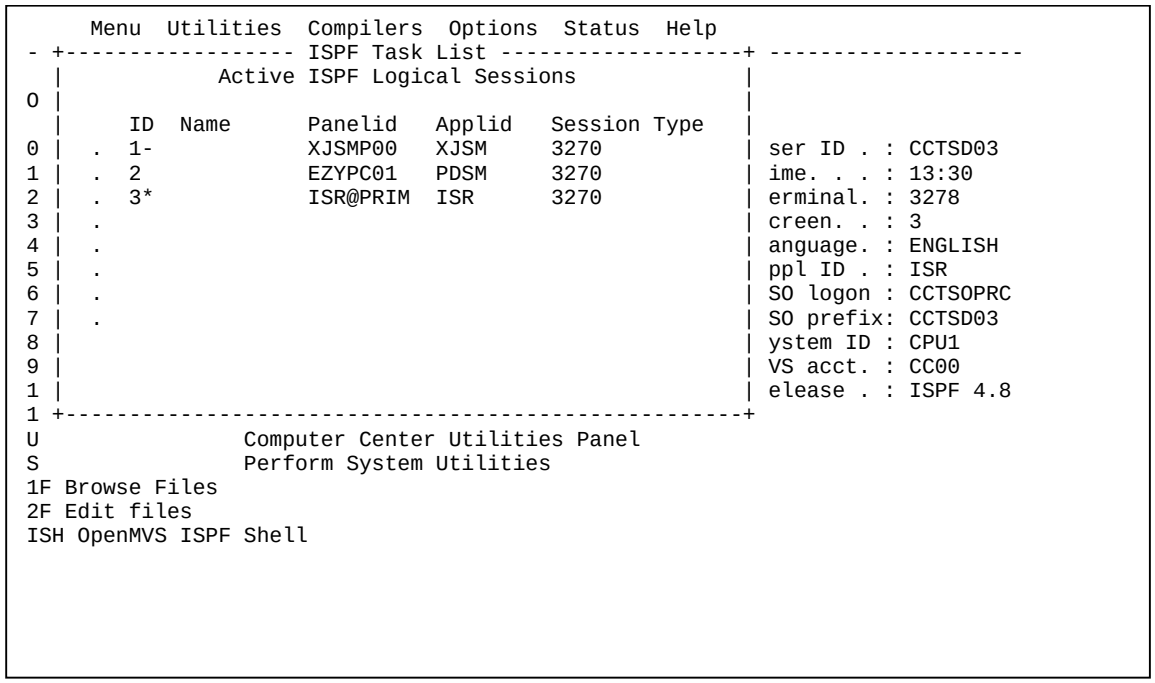
ISPF START COMMAND

The ISPF START command allow you to open up to eight ISPF sessions at once. Just type START and the session you want to start on the command line on any ISPF panel. For Example, if you want to start another EDIT session, type START 2 on the command line and press enter as shown below.

```
  Menu  Utilities  Compilers  Options  Status  Help
--------------------------------------------------------------------------------
                           ISPF Primary Option Menu
Option ===>   Start 2

0  Settings      Terminal and user parameters           User ID . : CCTSD03
1  View          Display source data or listings        Time. . . : 13:30
2  Edit          Create or change source data           Terminal. : 3278
3  Utilities     Perform utility functions               Screen. . : 3
4  Foreground    Interactive language processing        Language. : ENGLISH
5  Batch         Submit job for language processing     Appl ID . : ISR
6  Command       Enter TSO or Workstation commands      TSO logon : CCTSOPRC
7  Dialog Test   Perform dialog testing                 TSO prefix: CCTSD03
8  LM Facility   Library administrator functions        System ID : CPU1
9  IBM Products  IBM program development products       MVS acct. : CC00
10 SCLM          SW Configuration Library Manager       Release . : ISPF 4.8
11 DB2I          Perform DATABASE 2 Functions
U                Computer Center Utilities Panel
S                Perform System Utilities
1F Browse Files
2F Edit files
ISH OpenMVS ISPF Shell
```

To swap between your sessions, use the SWAP NEXT command or the SWAP LIST command. SWAP NEXT will display your open sessions in sequence. The SWAP LIST command will display a pop up window listing your sessions as shown below. You can move your cursor to the session you want to open and press enter. As you can see, the session descriptions in the pop up are rather cryptic so you may want to use the SWAP NEXT command.


Menu Utilities Compilers Options Status Help
ISPF Task List
Active ISPF Logical Sessions
ID Name Panelid Applid Session Type
1- XJSMP00 XJSM 3270
2 EZYPC01 PDSM 3270
3* ISR@PRIM ISR 3270
ser ID . : CCTSD03
ime. . . : 13:30
erminal. : 3278
creen. . : 3
anguage. : ENGLISH
ppl ID . : ISR
SO logon : CCTSOPRC
SO prefix: CCTSD03
ystem ID : CPU1
VS acct. : CC00
elease . : ISPF 4.8
Computer Center Utilities Panel
Perform System Utilities
1F Browse Files
2F Edit files
ISH OpenMVS ISPF Shell

MOST FREQUENT PROBLEMS AND SOLUTIONS

We have compiled a small list of problems and solutions we receive each day that may assist in your needs.

1. Dataset has run out of space and needs to be increased.
   SOLUTION: Request more space by sending over a space request form and we will increase it. If it is an emergency, call the HELP DESK.

2. Pattern DSCB record not found on VTOC (GDG'S).
   SOLUTION: Use the following: DCB=(CC.GDG,rest of DCB information)

3. PANDEL.
   This deletes off of PANVALET without having to back it up.

4. PANRMV.
   This backs up a member on PANVALET to a delete tape.

PDSMAN EZYEDIT USAGE AND TIPS

PDSMAN EZYEDIT is accessed from the Data Center utilities menu option 10, sub option 2. EZYEDIT provides many enhanced features that makes working with partitioned data sets much easier. EZYEDIT has extensive help available by pressing the PF1 key. Below are listed just a few of the many functions available from the PDSMAN EZYEDIT Selection Panel on the function line:

SI	System Information. Gives last IPL date and time, CPU model and serial number, IPL volume and unit, master catalog and unit and memory allocations at IPL
LISTA	Displays your current TSO allocations by DDNAME along with the VOLSER and disposition. You can use the TSO FIND command to locate a particular data set.
RECOVER	Recover a deleted PDS member. Specify the PDS name in the DSN/Variable # line and press enter. All deleted members will be recovered and given the name(S) ZZZ001, ZZZ002 etc. You can then edit and rename the members you want and delete the rest. This only works if you have not compressed the PDS.
ALTDIR	Adds directory blocks to a PDS directory. If the PDS has free space, ALTERDIR will allow you to increase the number of directory blocks without having to unload, reallocate and restore the PDS.

EZYEDIT allows you to perform many functions against partitioned data sets. PDSMAN EZYEDIT allows you compress a PDS on the fly with the Z option. You can find members across multiple partitioned data sets, You can scan for strings across a single or multiple partitioned data sets. Within a single partitioned data set you can compare two members and have all the inserted and deleted lines displayed or you can just have the differences listed.

SORTING JESMASTER DISPLAY OUTPUT

You can change the order in which JES-MASTER displays its output. The default job output display is JOB ID with in JOB NAME ascending. Use the following steps to change the order in which the information is displayed.

From the JES-MASTER+ Selection Panel choose option 0 for Parms.

```
--------------------- JES-Master+ Selection Panel --------------(V3R3)--------
SELECTION ===> 0

    Enter selected service Code or Name above,            MODE ===> DATA
       or JES xxxx to select an alternate JES,          USERID ===> CCTSD03
       or JES to select the primary JES.               JOBNAME ===>
                                                    JOB CLASSES ===>
                                                  OUTPUT CLASSES ===>
   -- SERVICE --                                   CONFIRM DELETE ===> YES
   Code --Name--                                 DEFAULT COMMAND ===> $DSPL
    S   SEtup    Set default selection criteria
    T   TUtorial JES-Master+ Tutorial
    0   PArms    Set JES-Master+ Default values
    1   JOblist  Job List Display and Process
    3   OUtlist  Output List Display and Process
    4   ACtive   Active Job List Display and Process
    5   SYslog   System Log Display
    6   COmmand  JES2 and MVS Command Facility
    7   PRinter  Printer Display and Process
    8   INit     Initiator Display and Process
    9   CB       Control Block Display
```

From the JES-MASTER+ Default Values Pane, enter S1 as shown below.

```
--------------------- JES-Master+ Default Values Panel ---------(V3R3)---------
SELECTION ===>  S1

   Enter END to exit parameter setup.
   Enter 0 in any parameter setup panel to display this panel.

   Enter n or Sn or Sort.n or Sort.id in any parameter setup panel to display
   a sort setup panel.  n is the List display function number.  id is at least
   the first two characters of the List display function name.

   Enter attributes below:
   Requeue CLASS  ===>                  Requeue jobs or datasets to this class
   Requeue DEST   ===>                  or destination if a REQueue command is
                                        entered without class or destination
                                        or both. Blank or * equal no default.

   Alternate JES  ===>          Enter the name of the JES for spool data access
   Auto-Summary   ===> NO       Show SUMMARY at job select (YES, FIRST or ABEND)
   Auto-Exclude   ===> YES      Exclude deleted jobs from Job List display (YES)
   Scroll Amount  ===> CSR
   Confirm Delete ===> YES      Request confirmation for delete (YES)
   Scroll Update  ===> YES      Update List displays on scroll (YES)
   Display Mode   ===> DATA     Job List display mode (LIST or DATA)
```

Enter the desired sort sequence on the JES-MASTER+ Joblist Dispaly Sort Fields panel shown below. The example below shows the display sorted by Jobname first then by the time the job was submitted to the internal reader. In other words, the last job in a group will be the most recent job.

```
--------------- JES-Master+ Joblist Display SORT Fields -------(V3R3)---------
COMMAND ===>

  Sort Key:   ID  A/D          See table below for Sort Key ID
        1 ===> J   A           A for Ascending Sequence (Default)
        2 ===> T   A           D for Descending Sequence
        3 ===>                 Press ENTER to store Sort Keys

    ID: Display Column:        Description:
>1   J  JOBNAME..............Name of Job
>2   I  JOBID................Type (J,S,T) and Number of Job
     N  JOBID................Number of Job
     C  JC...................Job Class (from Job Statement)
     Q  QUEUE................Current JES2 Queue
     U  USERID...............User ID
     P  PRIO.................Job Priority
 *   M  MC...................Message Class (from Job Statement)
 *   A  ACCT.................Account Code (from Job Statement)
 *   R  ROOM.................Room Number (from Job Statement)
 *   G  PROGRAMMER...........Programmer Name (from Job Statement)
 *   T  ADDITIONAL INFO.....Time on Reader

>1 Default Sort Key 1 Ascending   * These options cause performance degradation
```

Once you have your output sorted like you want, you must issue the SAVEPROF command to save the sort criteria in you profile. If you do not, the sort criteria will be lost when you logoff TSO.

Modified: 07/13/2010

TSO CURSOR SELECTION OF DATASETS FOR BROWSE , EDIT, OR DATA SET INFORMATION

You can now use cursor selection on data sets in TSO. Three new REXX execs have been created to allow you to browse, edit, or retrieve data set information just by placing you cursor on a data set name and pressing a PF key. The browse and edit functions invoke File-Aid browse or edit and pass the data set name to the BROWSE – DATA SET SPECIFICATION or the EDIT – DATA SET SPECIFICATION panels. This allows you to utilize the power of File-Aid to browse or edit datasets of any size, and organization. File-Aid supports VSAM, IAM, sequential, partitioned, and Panvalet file organizations.

In order to use these new features you must assign the commands to a PF key. To assign a command to a PF key type the word KEYS on the command line and press enter. You will receive the screen shown below.

```
+------------------------------ Keylist Utility -------------------------------+
|   File                                                                       |
| ---------------------------------------------------------------------------  |
| PRIVATE                 ISR Keylist ISRSPEC Change        Row 1 to 12 of 24 |
| Command ===>                                             Scroll ===> PAGE    |
|                                                                              |
| Make changes and then select File action bar.                                |
|                                                                              |
| Keylist Help Panel Name . . . ISRSPECH                                       |
|                                                                              |
| Key       Definition                                  Format  Label          |
| F1 . . .  HELP                                        SHORT   Help           |
| F2 . . .  SPLIT                                       LONG    Split          |
| F3 . . .  EXIT                                        SHORT   Exit           |
| F4 . . .                                                                     |
| F5 . . .  RFIND                                       SHORT   Rfind          |
| F6 . . .  RCHANGE                                     SHORT   Rchange        |
| F7 . . .  UP                                          LONG    Up             |
| F8 . . .  DOWN                                        LONG    Down           |
| F9 . . .  SWAP                                        LONG    Swap           |
| F10  . .  LEFT                                        LONG    Left           |
| F11  . .  RIGHT                                       LONG    Right          |
| F12  . .  RETRIEVE                                    SHORT   Cancel         |
+------------------------------------------------------------------------------+
```

You can assign the commands to any PF key you wish. I assigned the commands to PF13, PF14, and PF15. To display the definitions for these keys, press the PF8 key to advance the display as shown below.

```
+------------------------------ Keylist Utility -----------------------------+
 |   File                                                                    |
 | ------------------------------------------------------------------------  |
 | PRIVATE                ISR Keylist ISRSPEC Change       Row 13 to 24 of 24 |
 | Command ===>                                            Scroll ===> PAGE  |
 |                                                                           |
 | Make changes and then select File action bar.                             |
 |                                                                           |
 | Keylist Help Panel Name . . . ISRSPECH                                    |
 |                                                                           |
 | Key       Definition                                 Format  Label        |
 | F13  . .  TSO %FABROWSE                              SHORT   FABRWSE      |
 | F14  . .  TSO %FAEDIT                                SHORT   FAEDIT       |
 | F15  . .  TSO %DSILIST                               SHORT   DSILST       |
 | F16  . .                                                                  |
 | F17  . .  RFIND                                      SHORT   Rfind        |
 | F18  . .  RCHANGE                                    SHORT   Rchange      |
 | F19  . .  UP                                         LONG    Up           |
 | F20  . .  DOWN                                       LONG    Down         |
 | F21  . .  SWAP                                       LONG    Swap         |
 | F22  . .  LEFT                                       SHORT   Left         |
 | F23  . .  RIGHT                                      SHORT   Right        |
 | F24  . .  CRETRIEV                                   SHORT   Cretriev     |
 +---------------------------------------------------------------------------+
```

Under the Definition heading next to the desired PF key type TSO %FABROWSE for the cursor selectable browse function, TSO %FAEDIT for the Cursor selectable edit function, or TSO %DSILIST for the cursor selectable data set information function as shown above.

To use these functions you must be in edit mode. This is required for the REXX program to be able to 'read' the data set name from the screen. Place your cursor under the data set name and press the desired PF key. For example, on the screen below, the underscore on the letter 'S" in the data set name CCTSD03.SOURCE.PDS on DD statement SYSUT1 represents your cursor.

```
EDIT       CCTSD03.SOURCE.PDS(IEBGENER) - 01.94           Columns 00001 00072
 Command ===>                                               Scroll ===> CSR
 ****** ***************************** Top of Data ****************************
 000100 //CCGENER  JOB (CC,00),HARRISON,MSGCLASS=A,CLASS=A,NOTIFY=CCTSD03,
 000110 // PRTY=13
 000200 /*ROUTE PRINT N1R28
 000201 //*ROUTE PRINT N19R9999
 000210 //* /*ROUTE XEQ WELFARE
 000300 //STEP1    EXEC PGM=IEBGENER
 000400 //SYSPRINT DD  SYSOUT=*
 000500 //SYSUT2 DD DSN=CCTSD03.SCRATCH.TEST1.DATASET,
 000600 //   DISP=(,CATLG,DELETE),UNIT=DISK,SPACE=(TRK,(1,1),RLSE),
 000700 //   DCB=*.SYSUT1
 000800 //SYSUT1 DD DSN=CCTSD03.SOURCE.PDS(TEST1),DISP=SHR
 000900 //SYSIN DD DUMMY
 ****** ***************************** Bottom of Data ***************************
```

When you press the assigned PF key, the desired function will be invoked. Note that if you select

a partitioned data set that includes a member, the member name is passed to the browse or edit function along with the data set name.

If you invoke the browse function you will be presented with the following screen:

```
FILE-AID -------------  BROWSE - DATASET SPECIFICATION  ---------------------
 COMMAND ===>

 BROWSE MODE                ===> C          (F=FMT; C=CHAR; V=VFMT; U=UNFMT)

 SPECIFY BROWSE INFORMATION:
   DATASET NAME OR HFS PATH ===> CCTSD03.SOURCE.PDS(TEST1)
   MEMBER NAME              ===>            (BLANK OR PATTERN FOR MEMBER LIST)
   VOLUME SERIAL            ===>            (IF DATASET IS NOT CATALOGED)


 SPECIFY RECORD LAYOUT AND XREF INFORMATION:
   RECORD LAYOUT USAGE      ===> N          (S = SINGLE; X = XREF; N = NONE)
   RECORD LAYOUT DATASET    ===>
   MEMBER NAME              ===>            (BLANK OR PATTERN FOR MEMBER LIST)
   XREF DATASET NAME        ===>
   MEMBER NAME              ===>            (BLANK OR PATTERN FOR MEMBER LIST)

 SPECIFY SELECTION CRITERIA INFORMATION:     (E = EXISTING; T = TEMPORARY;
   SELECTION CRITERIA USAGE ===> N           M = MODIFY; Q = QUICK; N = NONE)
   SELECTION DATASET NAME   ===>
   MEMBER NAME              ===>            (BLANK OR PATTERN FOR MEMBER LIST)
```

From here press the enter key to invoke File-Aid Browse functions. File-Aid has extensive help that is available by pressing the PF1 key. File-Aid can be accessed from either the U.35 or U.37 (depending on your logon proc) Compuware Products Menu. The Compuware main menu also lists the web address for more information.

If you invoke the edit function you will be presented with the following screen:

```
FILE-AID ---------------  EDIT - DATASET SPECIFICATION  ----------------------
 COMMAND ===>

 EDIT MODE                  ===> C          (F=FMT; C=CHAR; V=VFMT; U=UNFMT)

 SPECIFY EDIT INFORMATION:
   DATASET NAME OR HFS PATH ===> CCTSD03.SOURCE.PDS(TEST1)
   MEMBER NAME              ===>            (BLANK OR PATTERN FOR MEMBER LIST)
   VOLUME SERIAL            ===>            (IF DATASET IS NOT CATALOGED)
   DISPOSITION              ===> OLD        (OLD OR SHR)
   CREATE AUDIT TRAIL       ===> N          (Y = YES; N = NO)

 SPECIFY RECORD LAYOUT AND XREF INFORMATION:
   RECORD LAYOUT USAGE      ===> N          (S = SINGLE; X = XREF; N = NONE)
   RECORD LAYOUT DATASET    ===>
   MEMBER NAME              ===>            (BLANK OR PATTERN FOR MEMBER LIST)
   XREF DATASET NAME        ===>
   MEMBER NAME              ===>            (BLANK OR PATTERN FOR MEMBER LIST)

 SPECIFY SELECTION CRITERIA INFORMATION:     (E = EXISTING; T = TEMPORARY;
   SELECTION CRITERIA USAGE ===> N           M = MODIFY; Q = QUICK; N = NONE)
   SELECTION DATASET NAME   ===>
   MEMBER NAME              ===>            (BLANK OR PATTERN FOR MEMBER LIST)
```

From here press the enter key to invoke the File-Aid edit functions. File-Aid has extensive help that is available by pressing the PF1 key. File-Aid can be accessed from either the U.35 or U.37 (depending on your logon proc) Compuware Products Menu. The Compuware main menu also lists the web address for more information.

If you invoke the data set information function you will be presented with the following screen:

```
EDIT       CCTSD03.SOURCE.PDS(BILLING) - 01.12            Columns 00001 00072
  +--------------------------- DATA SET INFORMATION ---------------------------+
  |                                                                            |
  |    DSName: CCTSD03.SOURCE.PDS                          DSOrg: PO           |
  |    Volume: DSK883                                      Recfm: FB           |
  |      Unit: 3390                                        Lrecl: 80           |
  |   Primary: 8                                         Blksize: 3120         |
  | Secondary: 1                                         Created: 1998/026     |
  |     Units: CYLINDER                                Referenced: 2002/241    |
  | Allocated: 10                                       Dirblocks: 150         |
  |      Used: 10                                      UsedDirblks: 131        |
  |   Extents: 3                                          Members: 783         |
  |  SMS Info: SMS MANAGED                                                     |
  | Dataclass:                                          StoreClass: PROD       |
  | MGMTclass: PRODMC                                                          |
  |                                                                            |
  +----------------------------------------------------------------------------+
 000015 //*************************************************************
 000016 //S0000    EXEC PGM=CCUTIL04,PARM=0000
 000017 //STEPLIB  DD DSN=CC.USERLIB,DISP=SHR
 000018 //SYSOUT   DD SYSOUT=*
 000019 //*************************************************************
 000020 //S0010    EXEC PGM=SORT,COND=(10,LT,S0000)
 000021 //SORTLIB  DD DSN=SYS1.SORTLIB,DISP=SHR
```

This screen will pop-up over your existing screen. Pressing the enter key or PF3 will take you back to your edit session.

Things to remember:

1. You must be in edit mode for these new features to work.
2. Tape data sets are not supported.
3. The data set information function does not support multi-volume data sets.
4. The data set information function does not support VSAM files. Use the File-Aid VSAM Utilities panel for this information.
5. Your cursor must be placed somewhere within the actual data set name, not under the DSN=.
6. If you receive an error in the upper right corner, press the PF1 key for additional explanation.

These functions are based on work by Doug Nadal who supplied the cursor selection code. It makes use of undocumented/unsupported zvariables within ISPF. There is no warranty or guarantee, implied or otherwise, associated with his code or the extensions developed by ITS. These functions have been tested and appear to work as described, however, ITS will not be responsible for any data loss or damage incurred by the use of these functions. Additionally, these functions may cease to work at some future time because of operating system or system software changes or upgrades, and continued compatibility cannot be guaranteed. Use at your own risk.

Modified: 07/13/2010

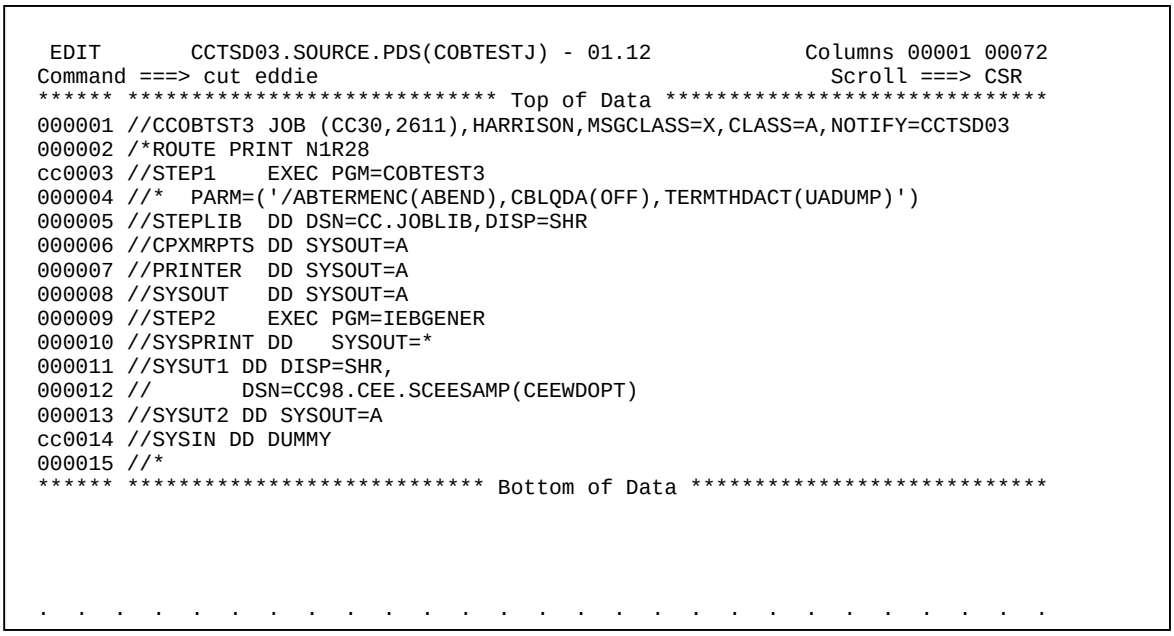
TSO CUT AND PASTE COMMANDS

Cut and Paste Commands

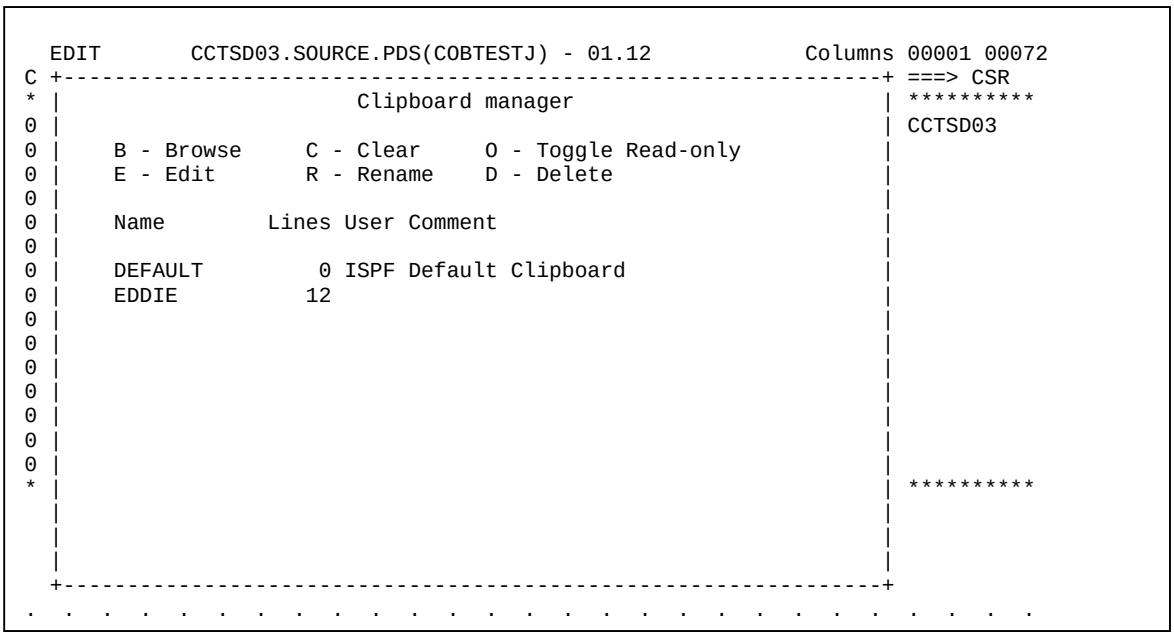
The CUT command allows you to copy or move lines from a data set to the clipboard. The PASTE command allows you to copy clipboard contents into another dataset. Mark the line(s) you to be copied to the clipboard with a C just like the COPY command. Mark the lines with a M if you to MOVE them to the clipboard. Block commands (MM, CC) are supported. Once the lines are marked issue the desired CUT command from the command prompt at the top of the screen. To paste the lines back into a data set, use the PASTE command. Mark the line where the text will be pasted with A or B for after or before and then enter the desired PASTE command from the command line. The following are examples of the CUT and PASTE commands:

CUT	Copies the marked lines into the clipboard named DEFAULT. If there is any data in the clipboard, the new data is appended to the bottom.
CUT EDDIE	Copied the marked lines into the clipboard named EDDIE If there is any data in clipboard, the new data is appended to the bottom.
CUT REPLACE	Copies the marked lines to the clipboard named DEFAULT after deleting any data that was there.
CUT DISPLAY	Displays a list of all the clipboards that are active. You can then EDIT, BROWSE, CLEAR(erase the contents of the clipboard), DELETE, RENAME or make the clipboard contents read only. You can also add comments to each clipboard to identify the contents.
PASTE	Copies the contents from the clipboard named DEFAULT into the current edit session at the point marked by A for after or B for before. The contents of the clipboard are then deleted.
PASTE EDDIE	Copies the contents from the clipboard named EDDIE into the current edit session at the point marked by A for after or B for before. The contents of the clipboard are then deleted
PASTE KEEP	Copies the contents from the clipboard named DEFAULT into the current edit session at the point marked by A for after or B for before. The contents of the clipboard are retained for further actions.
PASTE EDDIE KEEP	Copies the contents from the clipboard named EDDIE into the current edit session at the point marked by A for after or B for before. The contents of the clipboard retained for further actions.

The following screen show the CUT command with a clipboard named Eddie.



The following screen show the result of the CUT DISPLAY command.
Notice that the clipboard Eddie has 12 lines.



Modified: 07/13/2010

TSO NAVIGATING A COBOL PROGRAM 'S BRANCH LOGIC

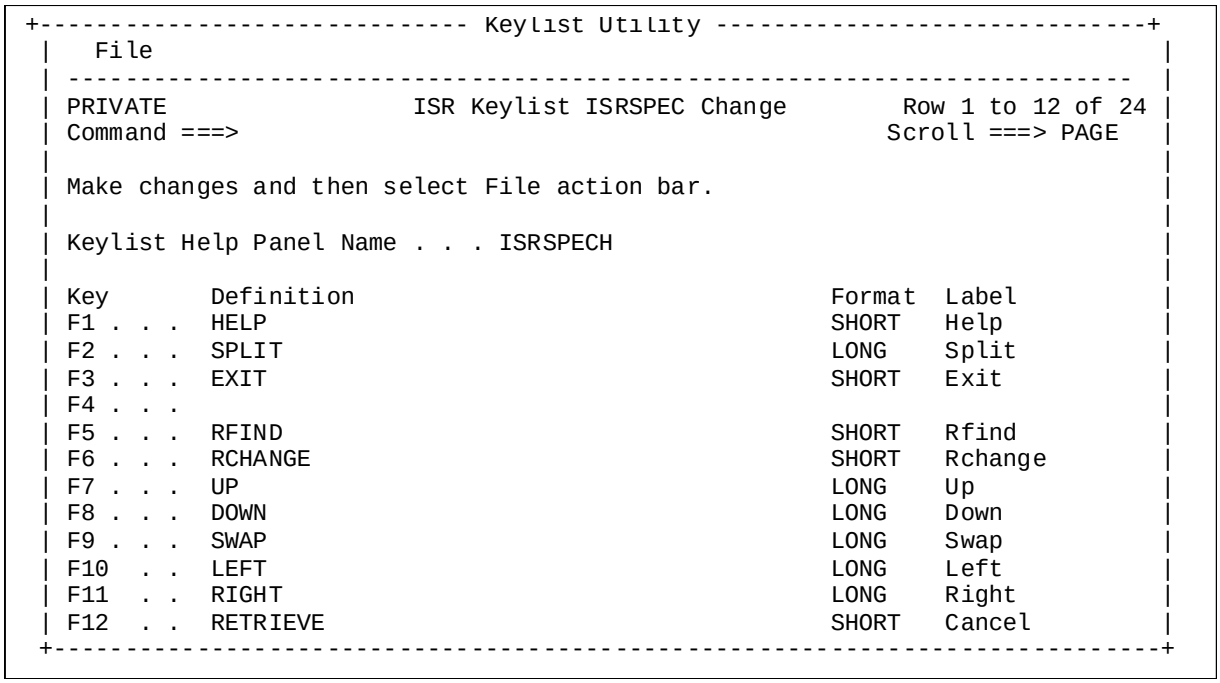
A new pair of edit macros have been installed for your use. These edit macros allows you navigate your COBOL program's branch logic. Just place your cursor on a line with a PERFORM, GO TO or a SORT PROCEDURE verb and press the assigned PF key and you will be taken to that paragraph as long as it is in the same source member. Press another PF key and you will be taken back to the calling statement.

To use this function, you simply need to assign the following edit macros to selected PF keys.

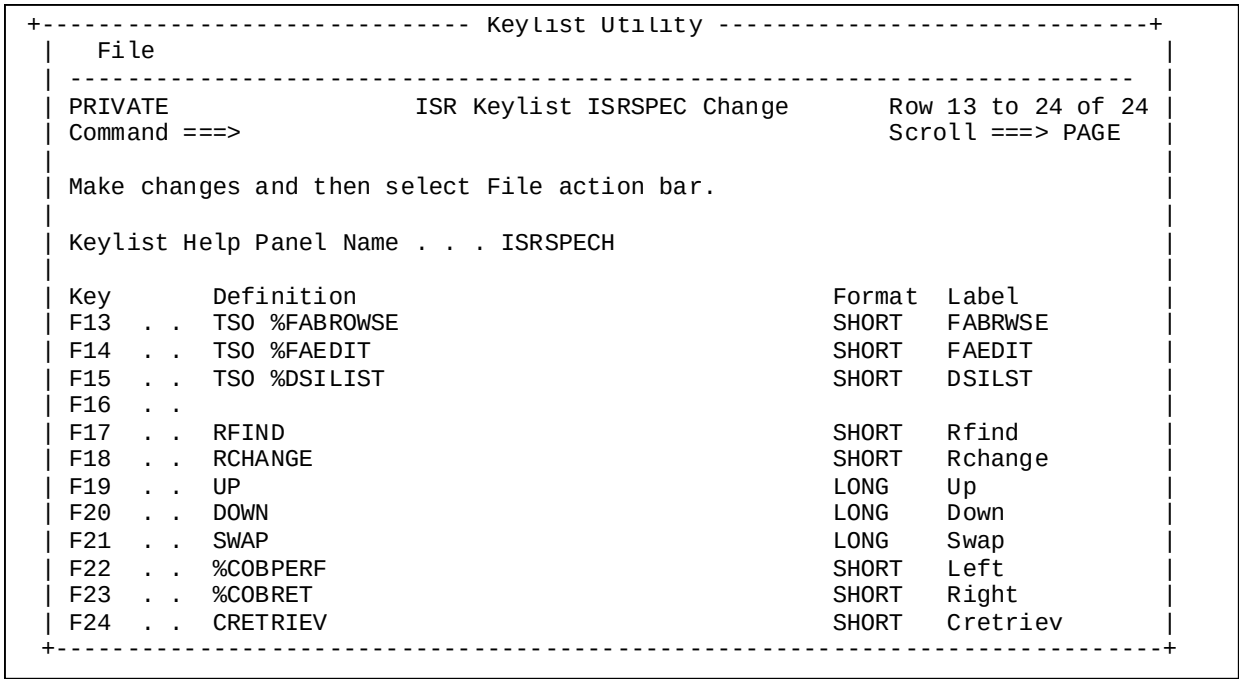
%COBPERF – this edit macro will follow the branch logic forward.

%COBRET – this edit macro will return back up the branch logic.

In order to use these new features you must assign the commands to a PF key. To assign a command to a PF key type the word KEYS on the command line and press enter. You will receive the screen shown below.



You can assign the commands to any PF key you wish. I assigned the commands to PF22, and PF23. To display the definitions for these keys, press the PF8 key to advance the display as shown below.



Under the Definition heading next to the desired PF key type %COBPERF for the forward branch navigation and %COBRET for the return navigation function as shown above.

Note that these two functions are ISPF edit macros and there for do not require the TSO prefix as needed for the REXX execs %FABROWSE, %FAEDIT, and %DSILIST.

To use these new functions you simply edit you program. Place you cursor anywhere on a line that has a GO TO, PERFORM, or SORT PROCEDURE verb and press the PF key defined for %COBPERF. You will be taken to the paragraph designated by the GO TO, PERFORM, or SORT PROCEDURE.

You can go up to 12 levels deep. In the upper right of the screen, the macro displays the current level A-L. If you press the PF1 key, the macro will display the line number that branched to this paragraph. To return back up the branch navigation chain, simply press the PF key defined for %COBRET.

These edit macros are available courtesy of Joseph Kohler.

CA-7 AUTOMATIC JOB SUBMISSION FORM

To set up or change the scheduling of a job, complete & fax the form below to ITS Data Services or
fill out this form online at:
http://dsitspe01.its.state.ms.us/its/dserve.nsf/AJS?OpenForm

GENERAL SECTION:

Agency: _____

Agency Code: _____ Email Address: _____

Person Requesting: _____ Date: _____

Authorized By: _____ Phone: _____

Automatic Job Submission:

Submit Time: _____ Job Name: _____

Check One: _____ Run on Holidays _____ DO NOT Run on Holidays

Please circle one and specify information in the following options:

1. Daily Every Day of the week Sunday – Saturday
2. Day of Week _____ (Specify what day)
3. Specify Week and Day of the Week _____
4. Every Month of the Year
5. Selected Month(s) of the Year _____
6. Selected Day (1-31) of Month _____
7. Selected Day (Julian Date) of Year _____
   (NOTE: this is good for one year only)
8. Every Nth Day _____
   (Specify Starting Julian Date and the number of days this job is to run
   (Example: Run every 45 days starting 032)
9. Every Nth working day of the month _____
   (Example: 2 would be the 2nd working day of the month when Mon-Fri are scheduled as working days)

CICS FORMS /CICS MAP

To set up or change CICS maps, complete and mail or fax the form below to ITS-Data Services or fill out this form online at http://dsitspe01.its.state.ms.us/its/dserve.nsf/CICSMAP?OpenForm

CICS FORMS

CICS Map

General Section

Agency**:** _____

Agency Code**:** _____ Person Requesting**:** _____

Authorized By**:** _____

Date Submitted**:** _____ Phone**:** _____

Define Mapset:

Mapset: _____

CICS FORMS /CICS PROGRAM

To set up or change CICS programs, complete and mail or fax the form below to ITS-Data Services or fill out this form online at http://dsitspe01.its.state.ms.us/its/dserve.nsf/CICSPROG?OpenForm

CICS FORMS

CICS PROGRAM

General Section

Agency**:** _____

Agency Code**:** _____ Person Requesting**:** _____

Authorized By**:** _____

Date Submitted**:** _____ Phone**:** _____

Define Program:

Program:_____ Language: _____

Data Location:_____ Execkey: _____

CICS FORMS /CICS Tdqueue

To set up or change CICS TDQ complete and mail or fax the form below to ITS-Data Services or fill out this form online at http://dsitspe01.its.state.ms.us/its/dserve.nsf/CICSTDQ?OpenForm

CICS FORMS

CICS Tdqueue

General Section

Agency**:** _____

Agency Code**:** _____ Person Requesting**:** _____

Authorized By**:** _____

Date Submitted**:** _____ Phone**:** _____

Define TDQ:

TDqueue**:** _____ Type: _____ DDname: _____

DSname: _____ TYPEfile: _____

Record Size _____ Blocksize _____ Record format _____

Block format _____ Disposition _____ Tran Id _____

Trigger Level _____ Indirect Name _____

CICS FORMS /CICS TRANSACTION

To set up or change CICS transactions, complete and mail or fax the form below to ITS-Data Services or fill out this form online at http://dsitspe01.its.state.ms.us/its/dserve.nsf/CICSTRAN?OpenForm

CICS FORMS

CICS Transaction

General Section

Agency**:** _____

Agency Code**:** _____ Person Requesting**:** _____

Authorized By**:** _____

Date Submitted**:** _____ Phone**:** _____

Define Transaction:

Transaction: _____ Program: _____ Twasize: _____

Taskdata Loc: _____

Taskdata Key: (circle)
User Cics

Spurge: (circle)
Yes No

Tpurge: (circle)
Yes No

CICS FORMS /CICS (all CICS forms on one)

To set up or change CICS information complete and mail or fax the form below to ITS-Data Services or fill out this form online at http://dsitspe01.its.state.ms.us/its/dserve.nsf/CICSFORM?OpenForm

General Section

Agency: _____

Agency Code: _____ Person Requesting: _____

Authorized By: _____

Date Submitted: _____ Phone: _____

Define Transaction:

Transaction: _____ Program: _____ Twasize: _____

Taskdata Loc: _____

Taskdata Key: (circle)
User Cics

Spurge: (circle)
Yes No

Tpurge: (circle)
Yes No

Define Mapset:

Mapset: _____

Define Program:

Program: _____ Language: _____

Data Location: _____ Execkey: _____

Define TDQ:

TDqueue: _____ Type: _____ DDname: _____

DSname: _____ TYPEfile: _____

Record Size _____ Blocksize _____ Record format _____

Block format _____ Disposition _____ Tran Id _____

Trigger Level _____ Indirect Name _____

PERMANENT DATA SETS - INITIAL SET-UP

This is also available on-line at:
http://dsitspe01.its.state.ms.us/its/dserve.nsf/DATASET?OpenForm

Request for Permanent Disk or Tape Files (Check appropriate item(s) where a choice is given)

GENERAL SECTION:

*DSN/CLUSTER NAME:_____

**DCB: (RECFM ____, BLK/CISIZE _____, LRECL _____)

ESTIMATED NUMBER OF RECORDS _____ NORMAL UPDATE CYCLE _____

PERSON REQUESTING _____ PHONE _____

***AUTHORIZED BY _____ DATE _____

DESCRIPTION OF USE:

_____

_____

DISK / MASS STORAGE(GDG ONLY,USE 3390) / TAPE(GDG ONLY)
NUMBER OF MEMBERS IN GDG _____

TOTAL SPACE REQUIRED _____CYLS, _____TRKS, _____REELS
DSORG= DA(IAM) VS(VSAM) PS PO

ESTIMATED GROWTH (PERCENT) _____1ST YR, _____2ND YR, _____3RD YR
SECONDARY ALLOCATION _____CYLS, _____TRKS
APPLICABLE USES: BATCH TSO CICS ADABAS
DIRECTORY BLOCKS _____
IAM MODEL REQUIRED: YES NO VSAM DATA SPACE REQUIRED: YES NO

GDG Setup for weekly _____ monthly _____ yearly _____.

Send all requests to the attention of ITS Storage Administrator,
301 North Lamar Street, Suite 508, Jackson, MS 39201

TCP/IP PRINT

If you need a printer to be setup for use with SAAS or SPAHRS, please call the Service Desk at (601) 359-5959 and request that someone contact you pertaining to your request for a printer. You will be asked to provide information about your agency, such as your agency code, and what type of equipment you will be using, and a contact person for future correspondence.